ELECTRICITY ON THE FARM *Magazine*

POLYTECHNIC INSTITUTE
FEBRUARY 1931
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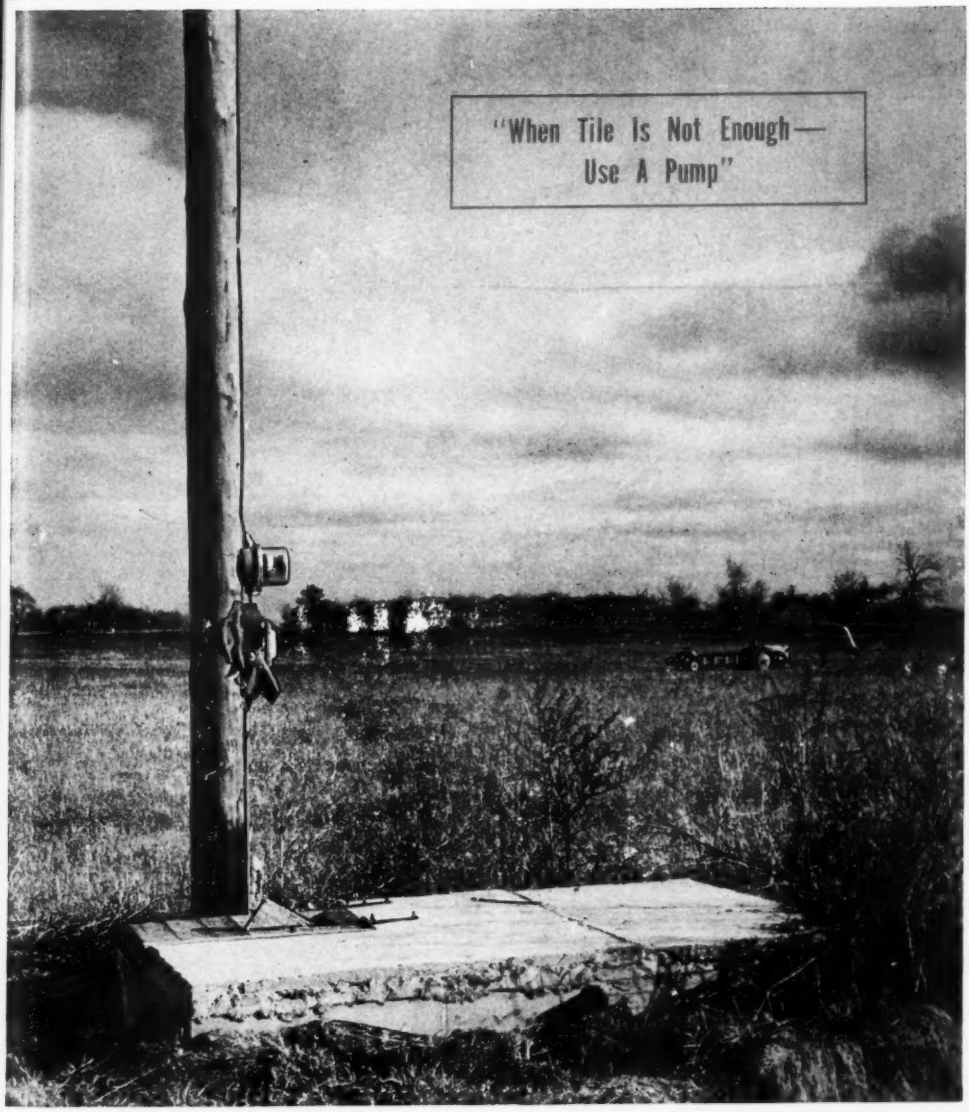
Power Shortage—Wants Land
Heat Lamps Needs a Jacket
Work Your Deep Well Cooker
What Caliber are Your Wires?
Broiler Meals are Good Meals

24th Year . . . . . No. 2



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FarmNews

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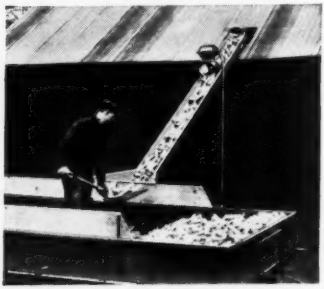
MORE POWER TO THE AMERICAN FARMER through more electricity on the farm

BARN CLEANER EASES MANURE HANDLING

ELECTRIFIED WORKSAVER OF THE MONTH

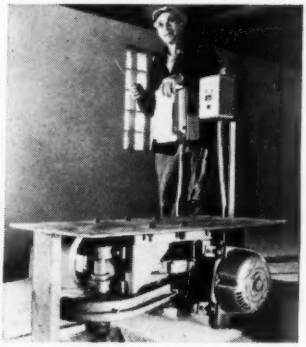
ALL PURPOSE ELEVATOR HAS PLACE ON MOST FARMS



Here is a rugged, versatile elevator that will save work almost anywhere a man can use a shovel or fork. The handy implement may be used to move litter or manure, small grain or ear corn, ground feed, pellets, chopped hay, ensilage or most any bulk material.

Mr. Dale Reiff, RR #1, South Whitley, Indiana, bought one of these elevators a year and a half ago. He has this to say: "I figure that the elevator has saved ⅓ of my labor time." Check "Elevator" in the coupon below, for more details.

Push button replaces fork on New York State dairy as G-E motor and control do the work



Smiling Gilbert West (above, left) demonstrates the simple controls that operate his barn cleaner. The "all electric" dairy barn (above, right) which Mr. West manages also uses General Electric fluorescent lighting and modern ventilation fans.

Gilbert West, head herdsman of Joseph DeMarco's Pine Grove Farm near Duanesburg, N. Y. is another of the growing number of farm operators who have found that by pushing a button they can forget the back-aching part of dairy barn cleaning. A new barn cleaner simplifies this chore for Mr. West who says: "This efficient barn cleaner has taken over all the drudgery and dirty work of handling the manure from approximately 70 milking cows and young stock. The time and energy which used to be given to this daily job is now given to better and more sanitary practices around the dairy farm. This pays off in better milk prices."

Mr. West goes on to say: "I know that the G-E motor and control on this equipment will give long and satisfactory service and that means a lot now when farmers must cut costs to a minimum and help is getting scarce." For more information about this electrical worksaver, check "Barn Cleaner" in the coupon below.

FARMERS' WIVES TAKE TO NEW HOME PASTEURIZER

This new home milk and cream pasteurizer has won the heart of many a farmer's wife, including Mrs. Kathryn Dolbeare of R. #8, Barry, Ill. With a handsome young son to watch out for she says: "The best and most important reason for liking our pasteurizer is that it gives us pasteurized milk — health insurance that city folks have insisted on for years."

A dependable G-E Calrod* unit in this model pasteurizer provides uniform heating and easy operation according to Mrs. Dolbeare. For more information about this useful product, check "Pasteurizer" in the coupon below.

*Reg. U.S. Pat. Office

General Electric Company
Section 671-15, Schenectady 5, N. Y.

I would like additional information on the following equipment:

☐ Barn Cleaner ☐ Pasteurizer
☐ Elevator

NAME_____

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An Introduction!

We'd like you to meet our new editor, W. J. Ridout, Jr. We want you to know his initials because he just doesn't use them. Everyone knows him as Jim. He is just "plain folks" from Virginia. The eldest of three children, Jim was brought up on his father's general farm at LaCrosse. That's in the Piedmont area where cotton, tobacco and peanuts are major crops. Jim attended school there and then entered the Virginia Polytechnic Institute at Blacksburg. There he earned his BS degree in Agricultural Engineering.

Mr. Ridout's entire career has been devoted to farm electrification. That's with the exception of the time he spent as an Ensign in the Navy during the second World War. His major activity during that time was invasions—he took part in four in the Pacific aboard an LST—but he went right back to the rural electrification field when the shooting was over.

His first work upon graduation from VPI was with the Kentucky and West Virginia Power Company at Pikeville, Kentucky. As rural service engineer, he worked at extending rural lines and showing farmers how to use electricity. After that, he joined the East Tennessee Light & Power Company at Bristol, Tenn. as a power engineer.

In '41 Jim joined the South Carolina Extension Service at Clemson College. As extension agricultural engineer in charge of farm electrification, he assisted in the development of programs for the curing of sweet potatoes and for the use of heating cable for plant propagation. A great deal of work was done on the development of freezer-locker plants and in the use of crop dehydration equipment. Then as war-time shortages increased, more work was devoted to the care and repair of existing equipment.

Jim left the South Carolina Extension Service to join the Navy. After being placed on inactive duty in 1945, he entered the Extension Service at North Carolina State College in Raleigh, in charge of farm electrification. The major part of his time there was spent on three programs—the need for good farm wiring, brooding and 4-H club work. As a result of his excellent work in the field of farm electrification, Mr. Ridout was offered the position of Rural Service Manager for

the Edison Electric Institute, an association of electric power suppliers. He accepted the appointment in 1947. In this position, he traveled extensively in every State of the Union, working very closely with the farm departments of the various power companies. The "Farm Electrical Equipment Handbook" published by the Institute was conceived and developed as part of the program of the committees with which he worked.

Mr. Ridout is a member of the American Society of Agricultural Engineers and is on the Research Advisory Committee to the U. S. Department of Agriculture on Farm Electrification.

But now perhaps you'd like to know a little more about what Jim is like. Well, he's easy to meet, has a good grip, likes farms and farming. He stands just under 6 feet, and weighs in at 224 pounds. He likes cigars, reading, golf, (or should I say cow-pasture pool) and he likes to work in his shop.

Jim makes his home about 20 miles outside of New York City, although he still has his place in Cary, North Carolina. He is married and is the proud father of three sons, Jimmy age 10, Bobby age 3, and Gary age 1 month.

Jim will be visiting you each month on these pages. We know you'll like him.

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24 W. 40th St.,
New York 18, N. Y.

FEBRUARY, 1951—VOL. 24, NO. 2

W. J. Ridout, Jr., *Editor*
Kenneth V. Anderson, *Asst. Editor*
Nan Shaw, *Housekeeping Editor*
Karl H. Gorham, *Business Manager*

Subscription rates: $1.00 per year; $2.00 for 3 years; $3.00 for 5 years. 10 cents per copy. Bulk rates on request.

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CASE-SHEPPERD-MANN PUBLISHING CORP.
Executive Offices: 24 W. 40th St., New York 18, N. Y.
Karl M. Mann, *President;* Fred Shepperd, *Editorial Director;* I. H. Case, *Vice-President and General Manager.* Mid-West Office: 8 So. Dearborn St., Chicago 3, Ill. *Western Representatives:* 605 Market St., San Francisco 5, Cal.; 6000 Miramonte Blvd., Los Angeles 1, Cal.

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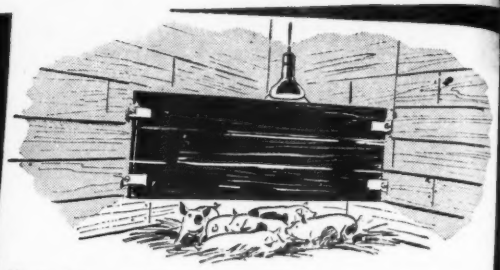

Stop Loss of Pigs This Easy Way. A good pig brooder with Westinghouse Heat Lamp keeps pigs warm; prevents smothering. Records show that farmers raise 1 to 3 more pigs per litter . . . produce 30% more pork this easy way. Lamp also ideal for brooding chicks, lambs and calves. Easy to install. Costs little to use. Hard white glass for ordinary use—$1.10. Shatterproof ruby glass to resist breakage from water—$2.95. Metal shades recommended to protect lamps against accidental breakage.

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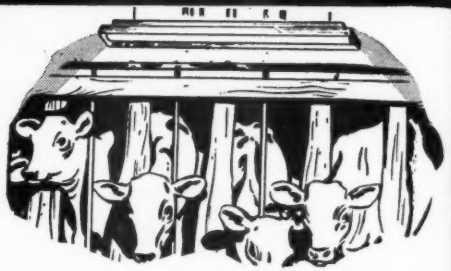

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Westinghouse projector and reflector lamps for farmyards, work areas, driveways, poultry ranges and similar areas. Have built-in reflectors. Sealed against dust and rain.

For high quality at low cost, insist on Westinghouse Lamps

Westinghouse Electric Corp., Rural Electrification Department, Pittsburgh 30, Pa.

G-10

YOU CAN BE SURE.. IF IT'S Westinghouse

When Tile is Not Enough— Use a Pump

By **VIRGIL MARVIN**†

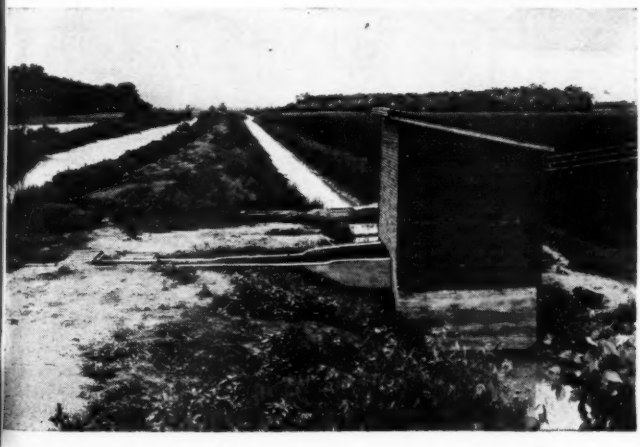
Farmers have always drained wet spots in meadows by means of ditches or tiles. In the past this practice has been limited for economic reasons to those fields from which gravity flow was obtainable. Now that farmers have electricity available, the use of pumps has made it possible to drain practically any field. Conventional tiling systems are used which drain into a large sump or ditch in the field to be drained. From this point, the pump raises the water to another ditch with sufficient elevation to allow the water to drain away from the area. Usually only a small lift is involved. Frequently the tile outlet is less than two feet below the ditch level. It is seldom more than six feet.

Typical of this new development is the drainage system installed in a 25 acre field on the farm of Ira Jones, Fulton County, Ohio. Having a perpetually wet spot of 5 acres, near the center, the field had very little value to the owner. Water stood in the depression a great deal of the time and the area was being taken over by willows and cattails. Jones laughingly recalls that he once seriously considered going into the frog farming business in order to get some use of the tract. He forsook the idea as being too risky. He resolved to drain the land if it were at all practicable to do so.

Experience was borrowed from persons farming low land near Lake Erie. There, much of the land is diked and pumped. It is similar to the well known windmill powered projects in Holland.

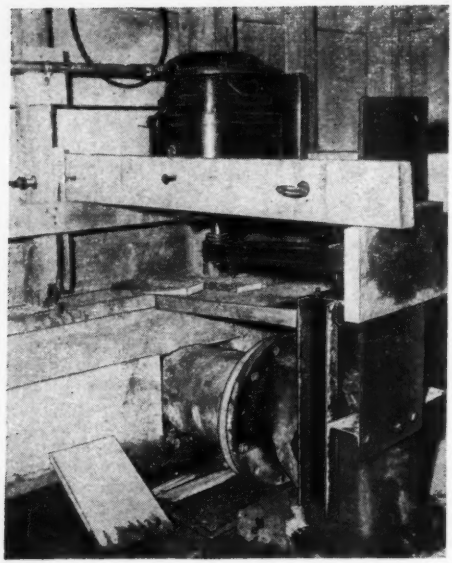
Tile drains were laid in the conventional manner in Jones' field with the outlet brought to

†Field Supervisor, Farm Power Department, Toledo Edison Company.



Above: This installation is on the farm of Otto Kleage at Bono, Ohio. Beyond the pump house at the left is the reservoir ditch into which the tile from 40 acres drains. The ditch measures 18 feet across, at the top, and is 7 feet deep and 290 feet long. A 5 hp motor drives an 8 in. pump which raises the water and pumps it, through a culvert, into the drainage canal at the right.

Left: Layout of drainage system on the Pete Wilhelm farm, Lucas County, Ohio. The drainage ditch at the right provides the outlet for 155 acres of tiled land that was once a swamp bordering Lake Erie. Water is pumped from the drainage ditch by a 7½ hp, 12 in. pump. It flows away in canal at left. The capacity of the pump is about 2600 gal. per min. Crops now grown on this reclaimed land are tomatoes, sugar beets, cucumbers and corn.



The interior of the pump house on the Wilhelm farm. Three Vee belts transmit power from the 7½ hp motor to the shaft of the pump. The pump discharge pipe can be seen as it passes through the wall below the motor.

the concrete sump. The cost of the sump was about $200. The tile outlet was 2.1 feet lower than the ditch into which the water was to be discharged. This was the point where the pumping system was installed. Since the volume of water that could be contained within the sump was relatively small, two obstacles had to be overcome. First, the electric motor had to be located above the highest possible water level. This would prevent submersion in the event the flow into the sump exceeded the capacity of the pump. Second, a float control was needed to make the outfit completely automatic.

Both of these conditions were satisfactorily met by installing a centrifugal pump. It was the cellar-drainer type except that it was considerably larger. The 2 hp electric motor was well above pump water level. The 200 gal. per min. unit has proven adequate even for spring flood conditions. The cost of the pump and wiring was about $300.

Mr. Jones figured that this installation should be charged off over a period of about seven years. On this basis, the cost per year per acre for drainage amounted to $7.15 per acre. This figure includes the cost of energy to operate the pump.

The pump used on this job was adapted for the small area involved. On larger fields the type of pump most generally used is the propeller type of centrifugal pump. It is simple, rugged, serviceable, and has a high rate of discharge at low lifts. Its power requirements are relatively constant. The maximum lift usually does not exceed 6 feet. Most of the water will be lifted no more than 3 or 4 feet. The capacity of this type of pump is usually based upon a fast flow at the discharge opening. Therefore, the intake pipe and discharge pipe should be as short as possible. This will keep the friction head at a low figure.

Typical of this type of installation is the farm of Pete Wilhelm of Lucas County, Ohio. Mr. Wilhelm has drained 155 acres of tiled land that was once a swamp bordering Lake Erie. Water was pumped from a drainage ditch by a 7½ hp—12 inch pump. This pump is capable of pumping 2600 gallons per minute. Mr. Wilhelm's initial investment amounted to $869. Charging this off over a period of seven years, Mr. Wilhelm's cost per year per acre including operating costs amounts to one dollar.

Average Drainage Costs Per Acre

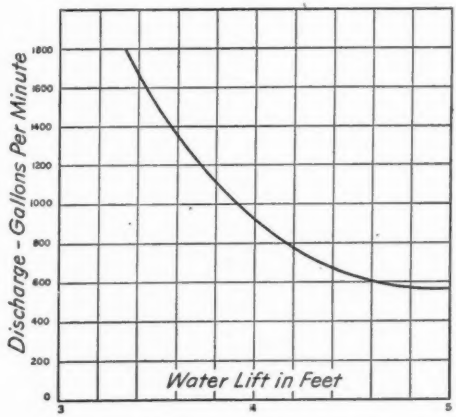
It is evident from the above figures that some pretty fine farm land can be reclaimed very reasonably. Seven other farms in this area were studied. The following figures are averages for these seven farms. They will give you an idea of the factors involved in this type of operation.

Average acres drained per farm..	85
Average pump size	8¾"
Average maximum lift	7'
Average tile spacing	56'
Average horse power requirement	5.6
Average total cost (Pump, motor, pumphouse)	$591.50
Average kilowatt-hours per month per acre	2.66
Average cost per year per acre (investment charged off in seven years—includes cost of electricity)	$ 2.00

Costs of tiling or ditching are not included in the above figures.

Points on Planning

In planning an installation of this type there are several points to keep in mind. The type of pump referred to handles large volumes of water, but the lift required should be held to the lowest possible amount. The delivery of an 8 inch pump operated at 1375 rpm by a 5 hp motor will drop from 1800 gallons per minute at a head of 3¾



This graph shows the discharge of a 5 hp eight inch pump running at 1375 rpm. Notice how it drops off as the height to which the water must be lifted increases. The water lift should be kept as low as possible.

feet to 660 gallons per minute at a head of 4¾ feet.

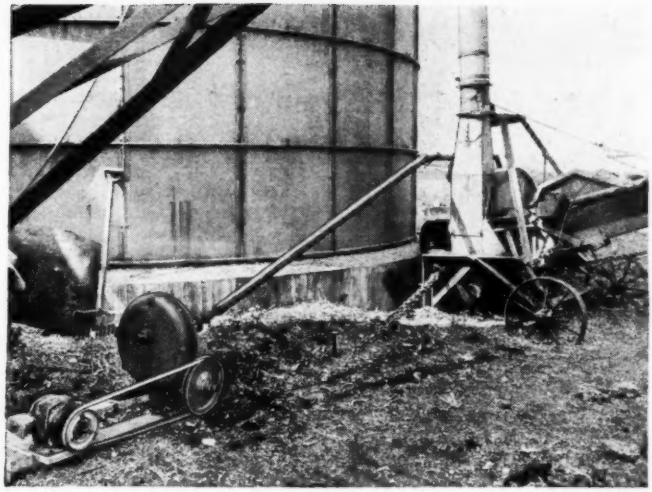
A relatively large reservoir should be provided to feed the pump. A float control system adds convenience to the job. The water is removed as it accumulates without attention. The reservoir should be large enough so that not more than four motor starts per hour will be made. A typical installation

On the Alfred Matthews farm a 5 hp, 2,000 gal per min pump lifts the water 3½ feet. The motor is controlled by relays. Two electrodes (contacts) placed at upper (starting) and lower (stopping) water levels furnish current to the relay. Here Jim Metcalf, Farm Editor of the Toledo Blade, examines the upper electrode. The two electrodes are suspended in the drainage reservoir.

for a 5 hp motor operating a 6 or 8 inch pump would be a ditch 15 feet wide, 7 feet deep, and from 200 to 300 feet long.

During times of heavy flow, a layout of this nature can be manually controlled without an undue amount of attention. It may be left running for extended periods if necessary.

Have you been wanting to buy another piece of land so that you could increase your operation? If you have, and you need it, go ahead. But first check the low spots on your own farm. You may be able to buy it from yourself.



Hoist Raises Feed Table

By C. P. FOX

Tom and Ed Reuter of Oconomowoc, Wisconsin, have eliminated the labor of elevating the feed table on their silo filler. They have built a power unit to do this job with very little cost.

They took a ⅓ hp electric motor with a 5-inch V belt pulley and drove a 9-inch V belt pulley on the shaft of an old pump jack. This was mounted on planks and made an effective speed reduction unit. On the end of the slow speed shaft of the pump-jack they fastened a universal joint from an old model "T" Ford. A similar universal joint was put on the end of the feed table hoisting winch.

Then, as shown in the picture, an old combine shaft was used to connect the two units.

Now the hoisting of the feed table is quick and easy. Tom and Ed have again shown how electricity can eliminate labor.

Vacuum Cleaner Rids House of Bees

Mrs. V. K. Stephens of Chevy Chase, Maryland, was troubled for two years by having bees take up their residence between the ceiling and roof of her screened porch. They infested the porch and spread into the house. All visible openings were plugged, but the bees still found their way in—thousands of them.

The problem was finally solved by using the vacuum cleaner to catch them. First, all the bees in the house and on the porch were drawn into the cleaner, using the extension tubes to keep a safe distance from the bees. They are easy to catch with the suction tube. Next, the tube was placed at the opening where the bees were going in and out. Come bee—he's in the bag. After about two hours, they were all in the bag.

Cover Picture

Ira Jones, Fulton County, Ohio, once considered raising frogs on this 18 acre field. There used to be a 5 acre swamp in the center. Instead, he tiled the field and installed a pump. The combination has enabled him to bring the land into profitable production. Even in the spring the pump is able to keep the land drained. In fact it handles the runoff from 7 additional acres.

Heat Lamps Need a Jacket

Simple Steps Insure Safety and Avoid Breakage

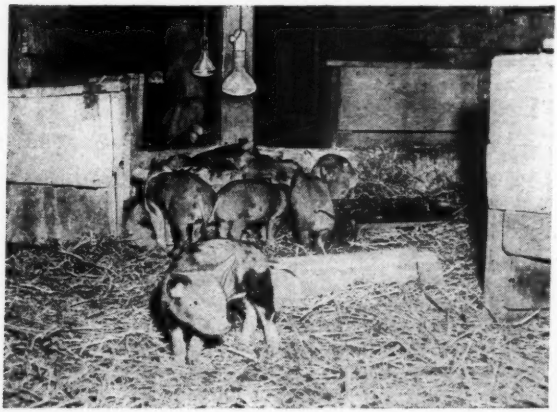
By CARL H. NEITZKE†

New uses are constantly being found on farms for infra-red heat lamps. You have probably found some new application on your own farm this winter. Their greatest use has probably been in the brooding of birds and animals. Chicks, pigs, lambs, turkeys, ducks, geese, young calves, and even dogs have been brooded with heat lamps. But they have many other uses! Such things as protecting water pipes from freezing, thawing frozen water pipes, heating well pits and milkhouses, warming car and tractor engines, applying heat to inflamed udders on dairy cows, and numerous household uses.

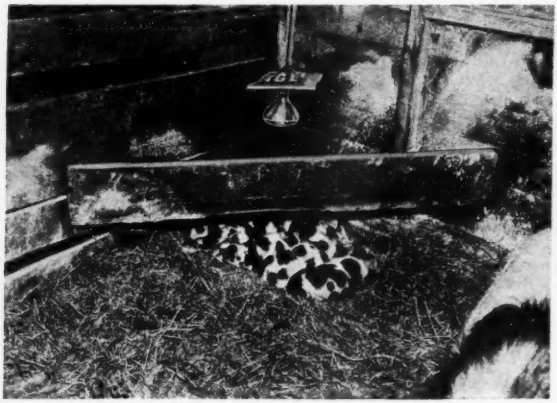
There are two types of heat lamps commonly in use on farms. These are the 250 watt R40 lamps. The R means that they have a reflector built into the bulb. The 40 means that the lamp is 40 eighths of an inch (5″) in diameter. They both provide the same amount of heat and consume the same amount of power. However, one of them is made of hard glass (Pyrex) to reduce the danger of breakage which would result if the hot glass were splashed with cold water. The hard glass lamp costs about three times as much as the regular infra-red lamp. For this reason, they are not so commonly found on farms. Because of the fact that the regular infra-red lamp will break if touched by the sow's nose, a wet glove, or water which may drip from the roof, certain precautions must be taken to provide for their safe operation.

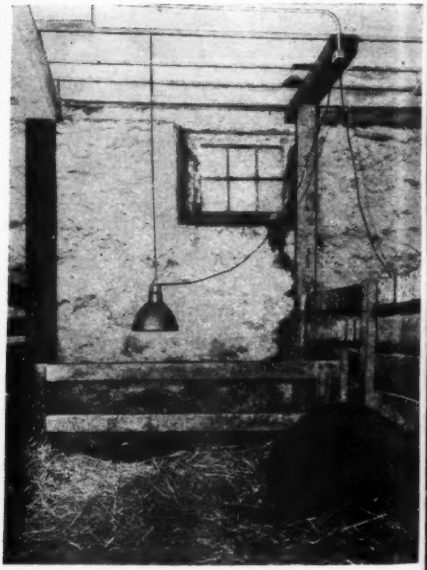
Use porcelain sockets or lamp

†Mr. Neitzke is Extension Specialist in Farm Electrification, University of Wisconsin.



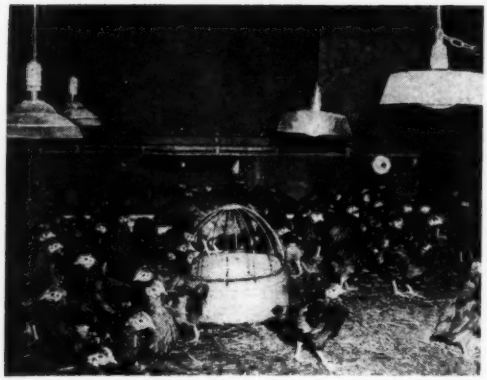
Above: This is the wrong way to install infra-red heat lamps. The bare lamps are completely unprotected from dripping or splashed water. Any hard object which might strike the lamp could break it. **Below:** An effort was made to protect this heat lamp with a piece of tin. However it is still an unsafe installation.





This is the *right* way to install infra-red heat lamps. Notice how the deep metal reflector completely shields the lamp. The unit is suspended by a separate chain. The cord, supplying current, is out of the way and is connected to a convenience outlet.

Right: Here, ordinary lamp reflectors were used to protect heat lamps for brooding chicks at the University of Wisconsin Electric Research Farm. **Below:** For brooding lambs hang the heat lamp unit over the center of the lambing pen. The unit should be about 18 inches above the ewe's back.



holders, do not use common brass fixtures.

Use only rubber covered cords. Type SJ is suitable. Do not use twisted cotton covered lamp cord.

Hang the heat lamp from a light chain or wire so that it cannot fall into the litter. Do not support it by its cord. Excess cord should be taped up in such a way that it will be out of reach of livestock.

Protect the lamp by means of a deep reflector so that water can not drop on it and so that it can not be struck. Besides protecting the lamp from abuse, it keeps dust from collecting on the bulb.

Use no more than six 250 watt heat lamps on a 15 ampere circuit.

Hang the lamps at the proper height. This will be 18 inches above the litter for day old chicks. As the chicks grow older, the units should be raised. For brooding pigs, hang the units 30 inches above the floor. For brooding lambs, hang the units 18 inches above the ewes back.

The cartons in which heat lamps are sold list the manufacturers recommendations for their use. If these are followed the infra-red heat lamps are one of the safest pieces of heating equipment available.

A Backbone for Barn Wiring

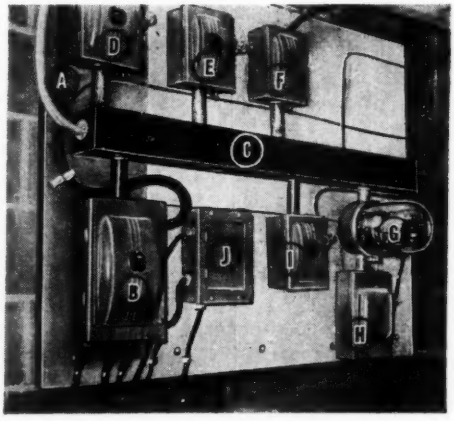
By **J. B. STERE**

On present-day farms "load-center" service provides a good "backbone" for the farmstead wiring system. It is a strong base from which to extend future wiring. But we frequently fail to plan for our buildings with the same care. The attached picture shows a real "backbone" for barn wiring.

This wiring trough distribution panel is on the farm of John R. O'Brien, R. D. 1, Amity, Pa. It provides for the addition of large unit loads without costly "patched-up" wiring. Already Mr. O'Brien has added many new uses of electricity. There are spare positions for other uses.

As many as 6 switch outlets can be served from one trough without the use of a main disconnect switch. When more than 6 are connected a main switch is needed.

This panel is located in a passage way between the dairy stable and milk house. Both buildings are served from the one panel.



Mr. O'Brien's barn wiring "backbone." The current feeds through three #2 wire conductors in entrance cable (A) into 30 ampere combination main switch and entrance panel (B). A 4"x4"x 48" wiring trough (C) is served from this point. This in turn feeds current to the following equipment through the switches indicated: dairy stable ventilation fans (D); milkhouse heater (E); milk cooler (F); water heater (H) through special meter (G); milking machine (I). Distribution panel (J) for lights and a 3 hp barn cleaner is served directly from the main entrance panel (B).

Recently six bronze impellers, each 145" in diameter and weighing 48,000 pounds, were cast in Philadelphia. They are for irrigation pumps in the Central Valley Project, California. Each pump will be driven by a 22,500 hp motor and will deliver 345,000 gallons of water per minute against a lift of 197 feet.

What Caliber Are Your Wires?

You Can't Kill a Bear With an Air Gun

If you want to do a little "plinking" or squirrel shooting, a 22 caliber gun is fine. If you want to go after bear, you'll need a bigger gun. Trying to put a 30-30 cartridge into a 22 rifle, just doesn't work. So unless you have a heavy gun you don't hunt bear.

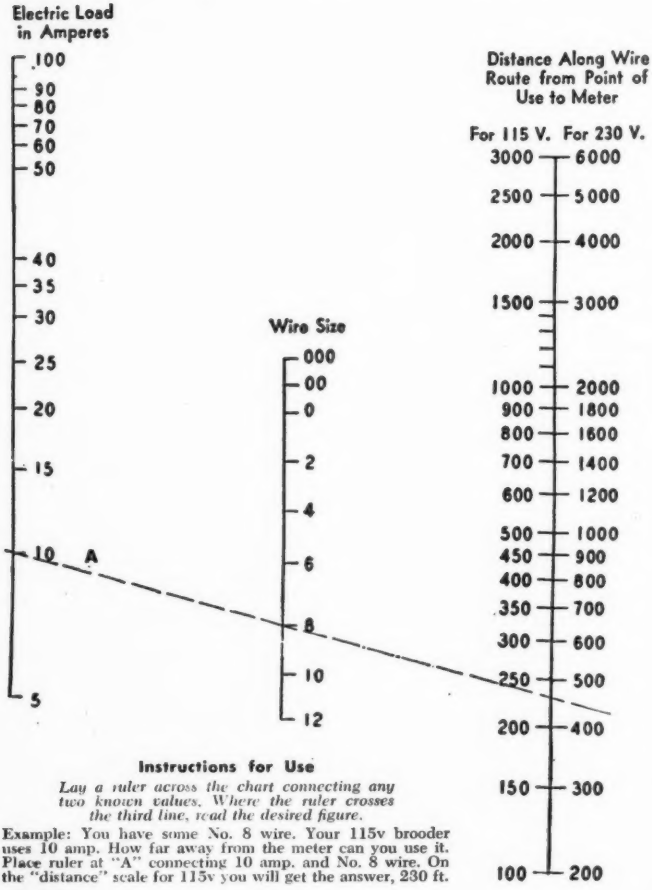
Electricity works the same way—up to a certain point—but it tackles the bear regardless.

A small piece of equipment, about "plinking" size, will operate nicely on a certain wire. Then some day you connect a bear-size load to that same wire. Like the gun, that 22 caliber wire is too small. But it will do its best to deliver that 30-30 wallop. That's where you "get up a tree".

The electric current tries to push along the wire. The wire is too small for it to get through. This creates a real ruckus and the wire starts to get hot. The hotter it gets, the more current (ammunition) you waste, the more danger of fire.

We know that electricity works this way. Tests have been run to find out what current a certain size wire can carry. This current capacity also determines the size fuse to use. If the right size fuse has been used on that 22 caliber wire, that 30-30 wallop will not go through it. The fuse will melt. That saves things from burning up.

WIRE SIZE SELECTION CHART



Instructions for Use

Lay a ruler across the chart connecting any two known values. Where the ruler crosses the third line, read the desired figure.

Example: You have some No. 8 wire. Your 115v brooder uses 10 amp. How far away from the meter can you use it. Place ruler at "A" connecting 10 amp. and No. 8 wire. On the "distance" scale for 115v you will get the answer, 230 ft.

How to Choose Wire

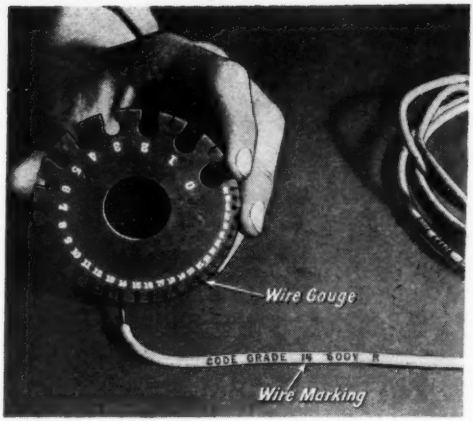
Well we've still got a bear-size load on the line to shoot. The thing to do is to increase the size of the wire. The wire size is determined by the size of the "bear" or electrical load. Choose your wire as you would your gun. Base your choice on the game you are hunting.

A motor or any other load is just like game. The bigger the load, the bigger the wire (gun) needed. The further away it is, the bigger the wire (gun) required. The accompanying chart will enable you to select wire of the proper size. Wire can be measured with a standard wire gauge. Measure the bare wire only. Be sure the current is disconnected if you are measuring wire that is in use.

How to Find Amperage

You will notice that by doubling the voltage from 115 to 230 (that's the powder charge), the capacity of a wire is doubled. Here is the reason. Electrical load is usually measured in amperes. That is the rate at which current is being used. It is determined by the power of the equipment expressed in watts, and the pressure of the electricity expressed in volts. The wattage of the equipment divided by the voltage of the electricity gives the amperage drawn. For example, let's say a heater draws 1150 watts. If this is operated on 115 volts, it draws 10 amperes (1150 ÷ 115=10). However, if this equipment is

Never guess at the size of wire. Even experts can be misled. The two sure ways of determining size of wire are (1) using wire gauge or (2) reading the markings found on most insulated wire.



operated on 230 volts, it draws only 5 amperes ($1150 \div 230 = 5$).

Now a great deal of equipment is made for use on 115 volts only. It must be used on this voltage. That is why each major building should have its own distribution panel. At the distribution panel, the current is divided into branch circuits. This enables you to use 230 volts for heavy equipment and 115 volts for regular usage.

All motors exceeding ½ hp should be operated on 230 volts for best results. Motors that may be run on either 115 or 230 volts are so marked. The nameplate will tell you how to change connections for the higher voltage.

Motors react very quickly to low caliber wiring. For this reason, you should never connect them to undersize wire. If you do, they'll get just as hot as a bear would if you stung him with a 22.

Machines Need Winter Grease

Summer grade transmission and diffierential gear oil in tractors and trucks can fail to lubricate metal parts because the oil does not become fluid in cold weather.

This congealed oil puts an undue strain on the working parts of machines and damage may result. If equipment is used during freezing weather it certainly will pay to have the gear oil changed in accordance with manufacturers' recommendations.

Deep-well pump heads and jacks subject to freezing also need a lighter grade oil during the winter. They can be damaged if operated with congealed oil or grease.

Even the household washing machine should be warmed up before it is used in cold weather. This can be done by letting it stand in a warm room or by filling the tub with hot water.

W. C. KRUEGER,
Extension Farm Engineer,
Rutgers University

Century C MOTORS

One Man and a Century Motor can often do the work of Two or More Men

Century type RS repulsion start induction brush lifting motors.

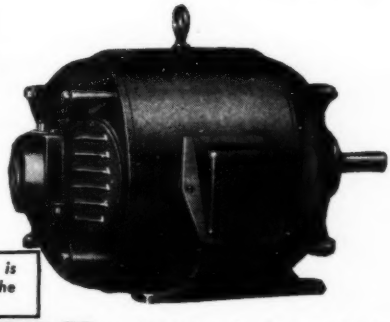
- *HIGH Starting Torque*
- *LOW Starting Current*

Century motors can help you do many farm jobs faster, lighten your work — and do many chores better than they can be done by hand.

You'll save time, work and the cost of an extra hand when you put Century motors to work on such jobs as feed grinding, grain elevators, hay dryers, etc. — water pumps, refrigerators, deep freeze controlled automatically by temperature or time clock.

Century repulsion start induction brush lifting motors are ideal for all-around farm use because they have the power to start the toughest loads with a minimum amount of starting current — thousands of them have been doing it for 46 years.

They are available in sizes from ½ to 15 horsepower. For the best in electric motor power, be sure you get Century.



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Century Electric Company is celebrating its 50th year in the electrical industry.

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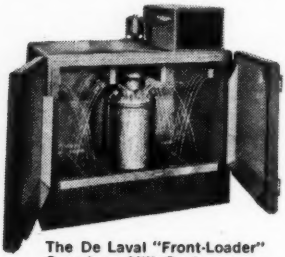
INTRODUCING THE NEW

DE LAVAL "FRONT-LOADER" SPEEDWAY MILK COOLER

Here's the easiest milk cooler to load and unload. It will end heavy lifting in your milk house. Cools from 90° to 50° and below in one hour. Builds solid cake of ice, approximately 25 lbs. to the can . . . and cools by spraying ice water over the cans. Equipped with De Laval Speedway "Drop-In" hermetically sealed unit for easiest maintenance. Other outstanding features are: automatic cooling cycle, "Drop-In" Water Circulating Pump, stainless steel can guides, easily removed and cleaned, non-clogging water troughs, copper cooling coils supported from can racks so floor is easy to clean, handsomely finished all-steel cabinet. Available in 4, 6 and 8 can models. See your local De Laval Dealer for complete information.

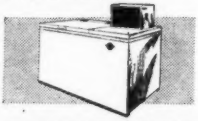


The De Laval "Front-Loader" Speedway Milk Cooler sprays the cans with icy water.

Handsomely finished all-steel cabinet with hermetically sealed "Drop-In" Unit.

Regular De Laval Speedway Immersion-Type Coolers, Too

The famous De Laval Speedway Milk Coolers of the familiar immersion-type are also available with the time-tested De Laval Speedway "Drop-In" Unit.



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☐ De Laval Speedway Immersion-Type Milk Coolers
Name .....
Town .....
R.F.D. ..... State .....

What Do You Know About Light Bulbs?

By S. D. LAING

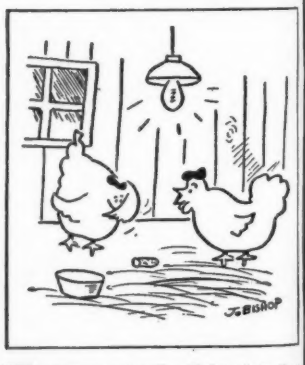
To most of us a light bulb is just a taken-for-granted thing we buy for a few cents and screw in a socket to get light. However, light bulbs have certain characteristics that should be considered in order to get the most for the money we spend for current.

As a general rule the larger the bulb the better the efficiency. Light units are called "lumens" and the larger the bulb the more lumens we get for the watts used. The manufacturers rate the lumen output of the various sized common lamps as shown in the following table:

Size of bulbs	Finish	Output in lumens
25 watt	Inside frost	260
40	" "	465
50	" "	660
60	" "	835
75	" "	1150
100	" "	1630
150	" "	2600
200	" "	3700
300	" "	5650

The lamps listed above are run-of-the-mill inside frosted lamps such as we all ordinarily use for general lighting. Special bulbs and finishes will usually be less than those shown above.

Many household lighting fixtures have from three to five sockets and 25 watt lamps are used in many cases. As an example a four light fixture using four 25 watt lamps will use 100 watts of current. Since each 25 watt lamps gives us 260 lumens



"Oh come now, the light ain't that bright!"

we will get a total of 1040 lumens. If we now replace the four 25 watt lamps with one 100 watt lamp we are still using the same amount of current but we will have 1630 lumens of light—an increase of fifty per-cent in light output from the same 100 watts of current.

Suppose we now replace the 100 watt lamp with a 150 watt lamp. We have increased current consumption by 50% but we now get 2660 lumens or a 150% increase over the original 25 watt lamps.

Another lamp bulb that shows considerable use is the three-light or 100/200/300 watt bulb used in floor lamps. The lumen output of this lamp is as follows:

On 100 watts	output	1410	lumens
200 "	"	3250	"
300 "	"	4660	"

Since most of us use the lamp on the 300 watt side almost exclusively we can now get a single filament 300 watt G30/35 bulb which will give us 5650 lumens or a 20% increase in light for the same amount of current.

From the table you can figure out where you might gain in light output without increasing your current consumption or where a small increase in current consumption would give you a much improved lighting service at a very small increased cost. It might pay you to think about it.

The next time you hear anyone envying persons who don't have to work for a living, ask them whether they also envy Fred Hensel, who could really live on a stack of sofa pillows for the rest of his days, but doesn't.

Fred prefers starting his days—seven a week—at 5 a.m., working on his farm near Birmingham, Alabama—which isn't easy for a man with two artificial legs and two artificial arms. Fred's real arms and legs were left in Okinawa in 1945.

A 1000 hen flock of layers will produce 450 pounds or about one barrel of water per day in their droppings and breath. Perhaps 50 pounds is carried out in the eggs laid. The remainder has to be disposed of by ventilation. If not removed—wet litter.

C. N. Turner, Cornell.

WHO MILKS MOST OF AMERICA'S BEST COWS?

1950 Eastern States Exposition, Springfield, Mass.

HOW MILKED	PORTION OF ALL HERDS
1. DE LAVAL MILKERS	65.2%
2. Milking Machine "A"	21.7%
3. Milking Machine "B"	4.3%
4. Milking Machine "C"	2.9%
5. Milking Machine "D"	2.9%
6. Milking Machine "E"	1.4%
7. Milking Machine "F"	1.4%
8. Milking Machine "G"	0.0%
9. Milking Machine "H"	0.0%
10. Milking Machine "I"	0.0%
11. Milking Machine "J"	0.0%
12. Milking Machine "K"	0.0%

1950 Nat'l Dairy Cattle Congress, Waterloo, Iowa

HOW MILKED	PORTION OF ALL HERDS
1. DE LAVAL MILKERS	47.6%
2. Milking Machine "A"	28.6%
3. Milking Machine "G"	8.7%
4. Milking Machine "H"	3.9%
5. Milking Machine "J"	3.2%
6. Milking Machine "B"	2.4%
7. Milking Machine "E"	1.6%
8. Milking Machine "K"	1.6%
9. Milking Machine "I"	0.8%
10. Milking Machine "D"	0.8%
11. Milking Machine "F"	0.8%
12. Milking Machine "C"	0.0%

1950 Ohio State Fair, Columbus, Ohio

HOW MILKED	*PORTION OF ALL HERDS
1. DE LAVAL MILKERS	44.4%
2. Milking Machine "A"	28.4%
3. Milking Machine "B"	8.6%
4. Milking Machine "G"	6.2%
5. Milking Machine "J"	4.4%
6. Milking Machine "H"	3.7%
7. Milking Machine "C"	1.2%
8. Milking Machine "D"	1.2%
9. Milking Machine "I"	1.2%
10. Milking Machine "E"	0.0%
11. Milking Machine "F"	0.0%
12. Milking Machine "K"	0.0%

*At this Fair, 48 additional herds were exhibited but their owners could not be contacted.

1950 Internat'l Dairy Exposition, Indianapolis, Ind.

HOW MILKED	PORTION OF ALL HERDS
1. DE LAVAL MILKERS	45.3%
2. Milking Machine "A"	29.3%
3. Milking Machine "B"	6.6%
4. Milking Machine "G"	6.1%
5. Milking Machine "J"	3.8%
6. Milking Machine "E"	2.8%
7. Milking Machine "H"	1.9%
8. Milking Machine "K"	1.4%
9. Milking Machine "I"	1.4%
10. Milking Machine "D"	0.9%
11. Milking Machine "F"	0.5%
12. Milking Machine "C"	0.0%

At the four great farm shows listed above representatives of the famous dairy herds of all breeds being shown were asked what make of milker they used on the home farm.

The conclusions are evident: De Laval milks the largest percentage by far. It is the "Milker of Champions" selected to milk most of America's best cows for only one reason—Better Milking.

Your herd will do better with De Laval Better Milking, too. See your De Laval Dealer today.

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Town.....
R.F.D..... State.....

Cooling Maintains Egg Quality

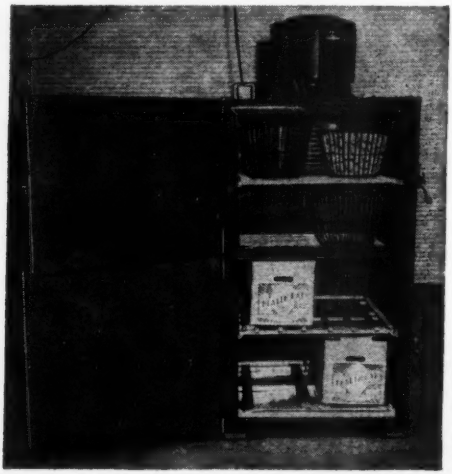
By I. P. BLAUSER
Extension Agricultural Engineer
The Ohio State University

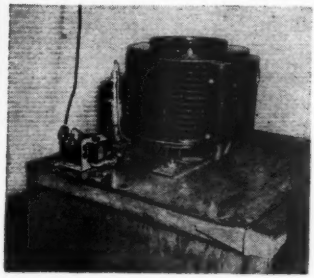
It does very little good to lock the stable after the horse has been stolen. Likewise, no amount of refrigeration can restore quality to a product once the quality has departed. The best that refrigeration can do is to preserve the quality that is there. Someone has made the remark that "an egg is never better". That's just another way of saying that an egg starts to deteriorate the moment it is laid. The higher the temperature at which the egg is held, the faster is the loss of whatever quality the egg may have had at the time it was laid.

Generally eggs are picked up at the farm only once a week. That means that eggs are held at whatever the farm storage temperature may be. This holding period runs anywhere from one to seven days. If eggs are to reach the market in the best condition, proper temperature and humidity must be maintained during their storage period. And there is a premium for quality eggs that is worth going after.

Prices received by the Southeast Ohio Egg Auction for 1949 are representative of what this premium can amount to. Here they are:

Grade			Price Received Per Dozen	Premium Per Dozen
White	large	AA	62.9 cents	11.1 cents
"	"	A	57.3 "	5.5 "
"	"	B	51.8 "	0.0 "
Brown	"	AA	57.6 "	6.8 "
"	"	A	55.5 "	4.7 "
"	"	B	50.8 "	0.0 "





Above: This is one of the farm egg coolers partially loaded. The cabinet is about 5'-6" high, 3'-0" wide and 3'-0" deep. **Right:** Top view showing details of mounting the compressor and controls. This is a 7/32 hp unit.

Egg marketing cooperatives and private egg marketing agencies recognize the need for proper storage. During the past several years many have installed proper cooling equipment to preserve the quality of eggs as they are received. This still has not answered the need for an egg cooler designed for use on the typical small farm. To answer this problem, a unit has been designed which will do a good job on the farm at a very reasonable cost.

This cooler is designed to maintain a temperature of 55 degrees with a high relative humidity (80 per cent or more). Its capacity when fully loaded is four 30-dozen cases and six 15-dozen wire baskets. Or, it will hold seven 30-dozen cases of eggs. That is large enough to take care of a week's production for flocks up to 700 birds in 50 per cent production. It will take care of a flock of 500 birds in 75 per cent production.

The egg cooler uses a drop-in type of cooling unit. If you are handy with tools, you can make it yourself. Or you may have it made. The cost will run from $150 to $250 depending on how much of it is home built. The refrigeration unit may be new or second hand. This also affects the total cost.

To find out what the cooler would accomplish, comparisons were made on the Bishop poultry farm in New Washington, Ohio. Eggs from the regular farm storage (better than average) and those handled in the mechanical cooler were graded. Here are the results:

Electrical Farm Egg Cooler

	8/29/50	9/1/50	9/5/50	Total	Per Cent
Large AA	188	190	208	586	54.3
Large A	139	140	120	399	36.9
Grade C	22	17	22	61	5.7
Checks	8	11	7	26	2.4
Bloods	3	2	3	8	.7
	360 or 30 doz.	360 or 30 doz.	360 or 30 doz.	1080 or 90 doz.	100.0

Regular Farm Egg Storage
Without refrigeration

	8/29/50	9/1/50	9/5/50	Total	Per Cent
Large AA	40	166	92	298	27.6
Large A	234	152	225	611	56.6
Grade C	72	33	28	133	12.3
Checks	12	6	12	30	2.8
Bloods	2	3	3	8	.7
	360 or 30 doz.	360 or 30 doz.	360 or 30 doz.	1080 or 90 doz.	100.0

It is interesting to note that the eggs which were put through the cooler not only graded higher but the weekly grading was consistent. Those put through the regular farm egg room, graded high when the weather was cool but low when the weather was warm to hot. When a market is developed for premium eggs, the marketing agency wants to have a regular supply, not just a supply when the weather is good.

Electrical consumption will vary from 50 to 75 kwhr per month depending upon operating conditions.

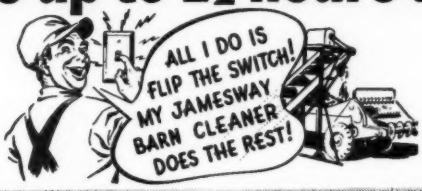
Detailed plans for the construction of this mechanical egg cooler may be secured for 30 cents (no stamps) from the Ohio Agricultural Extension Service, Room 205 Ives Hall, The Ohio State University, Columbus, O.

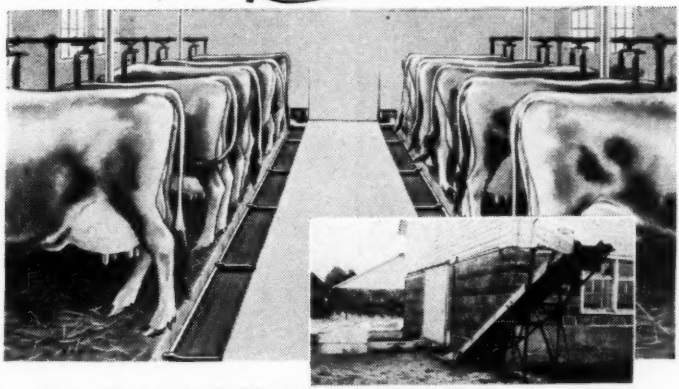
Cat Adopts Gosling

Charles Sakon of Sharon Springs, N.Y. sent us this story: Last year he found one of his goslings about dead. He wrapped it in a sweater and brought it into the house where he placed it under a reflector type spot-lamp. The cat shown in the picture had just one kitten. She left her bed and took possession of the gosling. All day long she would wash the gosling and at

night it would snuggle under her with the kitten. She kept the gosling for five weeks during which the gosling made a pest of himself by pulling the cat's whiskers and messing up the milk. At the end of five weeks, the gosling was put back with the rest of the goose family, but he seemed to like the cats better than the geese. Mr. Sakon uses 150 watt reflector spot lamps for brooding all his goslings. The lamps were placed 16" above the goslings.

Jamesway Barn Cleaner Saves up to 1½ hours a day





New Patented Shuttle Action Ends Drudgery Gives You All These Big Advantages

No more stooping, scraping . . . heavy lifting for you! With the Jamesway Barn Cleaner you just flip the switch! It cleans your barn cleaner!

Jamesway's amazing new pull-push shuttle action moves manure from gutter straight to the spreader. No chains in the gutter, no cross gutters, no inside pits! Clean your barn only once a day if you wish. The Jamesway Barn Cleaner is built to handle the load.

Stop in and see your Jamesway Dealer the next time you're in town. Let him show you how the new Jamesway Barn Cleaner can save you up to 1½ hours every day of the year. For *free* time-saving folders, mail coupon below.

1. Fits any barn . . . any gutter.
2. Power and strength for once a day clean out.
3. No indoor pits or cross gutters to collect filth.
4. Does away with idlers, gears, chain and cable drag lines inside stable.
5. Flat top paddles fold out of way. Permits hand cleaning when cows are on pasture.
6. Exclusive pull-push action does not take out valuable stall space.
7. Ideal for barns with single row of stalls.

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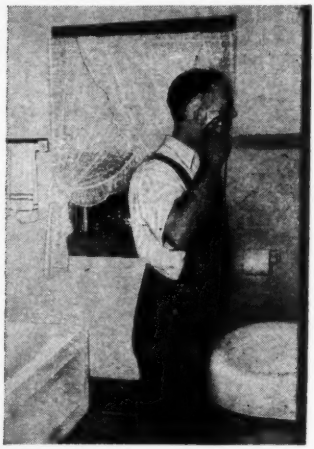
Shave Tale

Back in the days when every man sported as much chin finery as he could muster, the



mightiest and most binding oath was sworn on his beard. Now, instead of swearing on it, his modern clean shaven descendents swear at it.

Chief weapons against the morning battle of the beard were blades and lather until the invention of the electric shaver by Colonel Jacob Schick. This device revolutionized the shaving problem with resulting savings in comfort and time for millions.

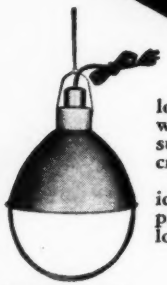
Beards are banished quickly and easily for men who shave electrically. Both beginners and seasoned shavers with beards ranging from peachfuzz to steel brushes find electric shavers a complete answer to their problem.

An electric shaver can be used in any room in the house. It isn't necessary to assemble all the gadgets used to shave with soap, water and razor. All you need is a convenience outlet. A mirror helps but it isn't necessary.

"I use my small electric incubator to furnish heat when testing planting seeds for germination in the spring. I also hatch any little wild bird eggs that I find so as to study their baby habits of life together. This is a most interesting hobby."

MRS. F. HARTMAN, Tivoli, Texas

Are you losing new-born stock unnecessarily?



PBU-1 Universal Brooder for Pigs, Lambs, Chicks, etc. Uses infra-red heat lamp.

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Steber infra-red heat Brooders are clean, safe, economical. They include types for large and small raisers, for pigs, lambs, and poultry. To enjoy greater profits with fewer losses and less labor, put Steber Brooders to work for you.

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CITY_____ ZONE_____ STATE_____

DUFFY'S CAVERN

Bennett Cerf reports a new diner near Los Angeles which has been christened "THE FLYING SAUCER." .... GOOD DRIVER: a fellow who obeys traffic rules and is AGILE enough to avert those who DON'T .... DISC JOCKEY: a fellow who lives on SPINS and NEEDLES .... GENTLEMAN: a fellow who knows enough to know he should NOT blow his KNOWS .... If'n you're one of those folks who are ALWAYS requoting "You can't have your CAKE and EAT it TOO," THIS should quiet you forever (author unknown): "I fell in love with a gal named KAY; THEN Edith came in view. THAT'S when I found you CANNOT have—YOUR KAY AND EDITH TOO." (Caw! Caw!) .... JINGLEJOLLY DEPT: "A SAD WEEK"—The year had gloomily begun, For Willie Weeks, a poor man's SUN. He was beset by bill and dun, And HE had VERY little MON. "This cash," he said, "WON'T pay MY dues; I've nothing here but ones and TUES." A bright thought struck him and he said: "The rich Miss Greenbacks I will WED." But when he paid his court to her, She lisped, but FIRMLY said: "No, THUR." "Alas!" he cried, "THEN I must die! I'M done! I'll drown—I'll burn—I'll FRI." They found his gloves, his coat, his hat—A CORONER upon them SAT .... Hy Gardner in CORONET reports an IVORY enamel-finished shotgun in a Minneapolis shop window. It was labeled: "FOR FORMAL WEDDINGS." .... OVERHEARD: "MY first husband wants to marry me AGAIN, but I sort of suspect that HE'S after the MONEY I married HIM FOR." .... GRAFT: DIP in the HEART of TAXES .... WINTER VACATION RESORT: A place where you go to get AWAY from it all—and INSTEAD—they get it ALL AWAY from YOU .... EVERSTOPTOTHINK? — Folks who live BEYOND their income should ACT their WAGE .... From PIVOT via QUOTE comes the SNICKERSCOOP-OF-THE-MONTH: When several vats in a London brewery were struck by lightning, but undamaged, the beer in them was found to have improved considerably in quality. THIS was believed to be the FIRST recorded case of a STORM ACTUALLY BREWING .....

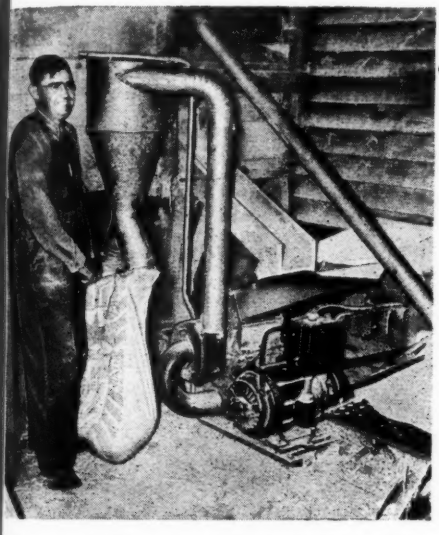
Your pun-peddler
DUFFY

Feed Costs Climbing?

Home Grinding Is The Answer

By WALTER L. BAKER, JR.†

Mr. O. R. Williams lives down in Clay County, Alabama. He has seen many changes in the art of raising chickens and in marketing his produce during his 23 years of farming. The introduction of hybrid seed has enabled him to raise more corn for feed on less acres and with less work.



Ever since Mr. Williams began raising chickens, he has attempted to grow enough feed to meet their needs. Besides corn he raises alfalfa for pasture for his flock. But the corn has always been a problem. The chickens couldn't harvest the corn themselves. He had to shell bushels by hand, load it into a wagon or truck, haul it to the mill, had to pay to have it custom ground, and then he had to haul it back to the farm. Mr. Williams found that 700 layers eat a lot of grain.

With electricity available he decided he would get out of the "trucking business." He bought a 5 hp electric motor, a small hammer mill, and a corn sheller. Both hammer mill and corn sheller are operated by the same motor. Now the only part of the shelling and grinding process to be mechanized is that of filling the sheller hopper with the corn after it has been shucked. His sheller has a capacity of about three bushels of corn per minute. Incidentally, he also saves the cobs. They are ground and used as litter. Now Mr. Williams' smile is more prominent, because he doesn't have to make near as many trips to town. And he has his feed when he wants it and how he wants it, thanks to electric power.

†Mr. Baker is Assistant Agricultural Engineer for the Alabama Power Co.

Ideas From Our Readers

"My son, who is blind, was unable to shave until he got an electric razor. Now he does the job so easy and is so proud of it."
MRS. J. S. ANDERSON,
LaGrande, Ore.

"We use a percolator as an inhalator at the first sign of colds. Very pleasing results."
MRS. E. DUGINSKE,
Schofield, Wis.

"My husband uses the electric fence to teach the kittens to keep away from the milk pails."
MRS. M. D. PIERCE,
Lincoln, Vt.

"In winter our bedrooms are unheated, but it is simple to plug in the electric iron and warm the beds before retiring, thus insuring a good night's sleep."
MRS. F. LATHROP,
Candor, N. Y.

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FLINT & WALLING MFG. CO., INC.
295 Oak St., Kendallville, Indiana

Electrical Housekeeping

Edited by NAN SHAW, 329 Memorial Union, Ames, Iowa

Why Women Like Freezers

So many men and women have been asking me, "Now, honestly, what do you think of us getting a freezer?" You, too, may have that same question on the tip of your tongue. Rather than answer you with what I think, I want you to know what farm women are saying about freezers—now that they have them.

In a recent meeting where 15 farm women were gathered, all of whom had freezers, they were asked what they liked best about their home freezers. These women came from farms such as yours. Most of them have access to a locker in town. Some are young with growing families, others have raised their families.

Five out of the 15 gave up their town lockers when they bought their freezers, five continue to rent locker space, and five never used freezer space before they had bought a home freezer.

Now all 15 would like to have more freezer space at home — not less than 24 cubic feet. All of them preferred having the freezer someplace other than the kitchen — most of them had theirs in the basement where they consider it handiest for preparation, storage and servicing.

One woman said, "It sounds peculiar to tell it, but I bought a freezer because I wanted to be modern! If you ask my husband he will say he bought it to put strawberries in. He has 65 boxes of them now. Maybe we'll have company all winter."

"My two children keep me plenty busy," another commented. "With the food in the freezer, I can depend on having good meals in a hurry if company drives into the yard. It really spoils you. I like the freezer because it's like that old standby, the community store."

One homemaker said, "We dress 25 to 30 chickens at a time. Maybe I don't have a sale for all of them on that date, but over two weeks' time I can sell every one of them.

"Also, some of my foods grow in small quantities at different times. I pick a lot of strawberries and raspberries out in the woods. You don't have enough time to go after them and fix them and then take them to the town locker. And lots of times the locker would be closed by the time I could get there. I wouldn't drive 15 miles for two boxes of berries. But with my freezer, I can put a few boxes away every day or so. Within two weeks, I picked over 20 quarts of blackberries. They will make nice pies this winter."

One freezer family had an English guest spend a month in their home. Not knowing what a food freezer was, he had some interesting comments. "He was very impressed with all the meals and the fact that I could go out and do the things I do and still have a very good meal," the homemaker remarked.

Most of the women kept some prepared foods, such as cakes, pies, and stews, in their freezers.

One said, "I don't put a lot of prepared foods in my freezer except when the food is in season, such as strawberries and cherries. Then I make up a few pies ahead and have them in my freezer until I need that

Mrs. Chan Read, Putnam County, Illinois, likes to freeze sweet rolls. Here she is placing a panful in her freezer. A few days later, when she's in a hurry, they'll be convenient and simple to bake.

space for something else. We like home-baked beans. I bake them in large quantities and store them in my freezer. I also make strawberry tarts and use them for a treat later on."

Freezing the children's school lunch was a time-saver for one homemaker. "I prepare the food ahead of time, making the sandwiches and freeze them," she explained. "In that way it doesn't take time in the morning to get them ready. I make cakes, rolls and cookies.

"One morning I was out of bread and I had forgotten to take it out of the freezer. I toasted it right out of the freezer and it was much fresher that way. The children enjoyed it."

"I do make individual pies," another woman said. "I make a dozen of them—berry or apple pies. I bend little pie pans up on the sides, so they hold the juice and fit into a dinner box. You can put them in the box and they will be thawed out by noon."

One woman said her family had originally bought a freezer for meat only. Her husband said he didn't want it filled with paper boxes. But now she makes pies when she is preparing berries or cherries, freezes them and bakes them as needed.

No Freezer Burn

Several women commented on a new way of packaging chicken. One uses 8 by 8 pans, lays a waxed paper in the bottom, and puts the well moistened chicken in, skin side out, cut side in. Then she puts a paper over the top, tucks it in around the edges, and freezes the chicken. That makes a nice firm package. Then she takes it out and wraps it.

"You can cover the chicken with water if you want to," she said, "even freeze them in ice. I don't—I make the chickens real damp so they get coated with ice, and I do not have any trouble with freezer burns, as I did at first. The chickens were dry and didn't taste good. After I found out what was wrong, I dampened the chickens, and haven't had any trouble with freezer burns since."

They kept their freezers full all year round, the women said. One explained, "I think by keeping it full, it works better and doesn't take so much electricity. When the apples start to come in, I make applesauce, package it and put it in the freezer. The seasoning goes through it beautifully, and it is just wonderful when you open it. That frozen applesauce is just like ice cream to me, and other people have told me the same thing. That is one of the ways I utilize space in my freezer and keep it full."

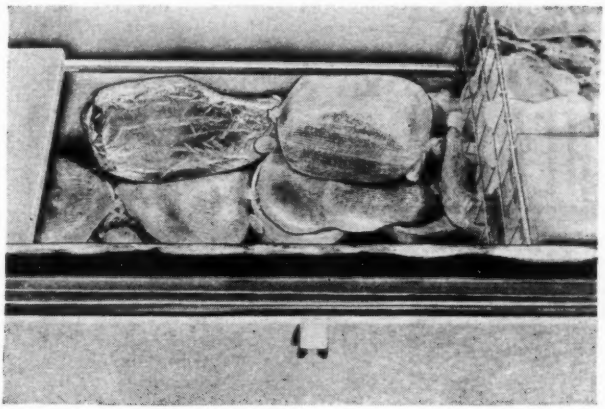
Another added, "By the time the meat tapers off you are starting on the vegetables, so you have your freezer full most of the year."

"I handle game and game birds exactly like beef and chicken," one homemaker reported. Her husband likes to fish, and brings home small catches. Now with a freezer, they can hold the fish until enough have accumulated for a family or a company meal.

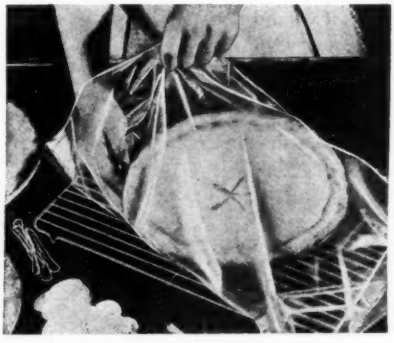
All the women are firmly convinced that their home-grown and home-frozen food is better than commercially frozen food. Very few of them, apparently, buy frozen food.

One homemaker said that frozen foods are especially nice for Sunday mornings. There is always a rush to have a nice breakfast and get to church. Now most of the Sunday breakfast can be done during her leisure time during the week.

All agreed that they like to work with frozen foods. They find food preparation easier and they like the results.



Most homemakers like to keep a full freezer. In their opinion they work better that way and use less electricity. What's more they're as good as a community store—and handier!



Pies are a favorite from the freezer. They may be stored either cooked or uncooked. As with all foods, packaging is very important. Some plastic packaging materials such as that used here, may be reused. They come in bags or sheets.

My home freezer just fits the spot.
I wouldn't trade it for house and lot;
Time and labor it saves me much;
When guests drop in I'm not "in Dutch."

MRS. G. C. PARSONS,
Tecumseh, Oklahoma.

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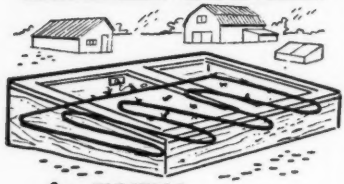

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How We Pasteurize Our Milk

Milk, even for grown-ups, is a daily must to assure bone protection and body growth.

Unfortunately, milk can be a disease carrier and medium for the development of harmful bacteria. All milk for the family should be pasteurized for health protection.

Letters from farm women this month tell how they put electricity to work to pasteurize their milk supplies.

MRS. NEIL FLANAGIN, JR. of Stevensville, Montana, writes: "Nearly three years ago our first baby reached the age when her doctor recommended taking her off formula and starting her on pasteurized milk. Until that time my husband and I had been drinking raw milk. Our dairy cows were tested regularly, our milk was top quality with a low bacteria count, so we had felt it was safe enough for us to drink. But we realized that no matter how clean a dairy herd apparently is, there is always a possibility that the raw milk contains dangerous disease organisms. And we didn't want to take any chances where the health of our baby daughter was concerned. So we faced the problem of finding a satisfactory method of pasteurizing our home supply of milk.

Our doctor suggested a home pasteurizer, or that we boil the milk for five minutes if we did not want to invest in a pasteurizer. We did not care for the taste of the boiled milk and so we decided that a home pasteurizer would be a good investment. We purchased a pasteurizer from our dairy supply dealer on his recommendation. Now, nearly three years later, we have nothing but good to report about it.

"The pasteurizer has been in almost daily use during that time and is still in perfect condition. It is so simple to operate and very easy to clean. Since it is automatic, it takes very little time to use it. It does not change the flavor of the milk perceptibly. It is quite inexpensive to operate, and takes a minimum of storage space.

"These are some of the reasons why I am completely satisfied with the way we pasteurize our home supply of milk. But, of course, the main reason for the pleasure I take in our home pasteurizer is the knowledge that it makes our milk safe for our children and ourselves to drink."

MRS. ANITA ZAMOSTANSKY of Canterbury, Connecticut, writes: "Two months after we were married, my husband came down with undulant fever and had to spend ten weeks in the hospital. He is home now but the doctors say he may have symptoms of this disease for about 20 years.

Jimmie Read likes milk. And his mother, Mrs. Chan Read, wants him to have it. But it must be safe. This pasteurizer makes it easy for her to be sure that it is.

"We were determined that no one else in our family should contact undulant fever, so we purchased an electric pasteurizer. We pasteurize all the milk for our home use in it. I should say the machine pasteurizes the milk, as the only part we take in the pasteurization process is putting the milk in and taking it out. Four quarts can be put in at a time. When the milk is pasteurized a buzzer sounds. We then transfer the milk to a large covered pail and immediately place it in our milk cooler. That is all there is to it.

"There is no endless stirring or worry of burning milk. Instead, we have peace of mind and know that our family is safe from all the diseases raw milk can carry."

MRS. GEORGE C. FEIKER of Haydenville, Massachusetts, writes: "I write this with sincere enthusiasm for it is about one of our favorite electric appliances –our electric pasteurizer.

"We moved to our farm from the city when our first child was a baby, and thought now that we were in the country we could have all the rich fresh milk we wanted right from the cow. But the doctor said no raw milk, and the reason for his advice was brought to my attention strongly when I was in the hospital for my second baby. Sharing my hospital room was a young mother who found she had undulant fever.

"When I returned home, we realized that with two healthy children it was just not economical to buy pasteurized milk at the store. We could buy our home pasteurizer and have safe milk for one-fifth the price. There was just no comparison in the richness we could get by using the raw milk and pasteurizing at home.

"With increase in milk consumption our pasteurizer easily paid for itself in less than a year. And such an easy household job to put our gallon container of raw milk in the pasteurizer and plug it in. When the buzzer sounds we know we have our day's supply of safe, rich milk, the very best available. The gallon container is so much easier, too, than bottles to store in the refrigerator and keep clean."

Mrs. S. H. Hills of Oregon, Illinois is proud of her home pasteurizer. Here she is showing Mrs. Bertha Varnum, Ogle County Home Adviser, how simple it is to use.

One of the letters was from MRS. W. J. EDWARDS of Cedar Grove, Wisconsin, a former nurse who writes: "When we moved to the farm a year ago, our twin babies were four months old. Although there are other methods of home pasteurization of milk, I needed one which would not require much time and yet be absolutely reliable. We purchased an electric pasteurizer and are very pleased with it.

"As soon as the milk is brought into the house, I pour it into the pail and plug in the equipment. When the process is completed a buzzer sounds. The milk is quickly cooled by placing it under the cold water faucet. I stir it a couple of times while cooling it, then bottle and

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refrigerate it immediately.

"This piece of equipment is easy to clean, simple and inexpensive to operate, and it is an important part of health protection.

"As a former nurse who has seen her share of undulant fever and other illnesses carried by raw milk, I wouldn't dream of using raw milk. Yet many farm women say, 'I use so little milk, it wouldn't pay for me to pasteurize it.' It will be a healthier day for farm people when everyone realizes that a cup of infected milk can produce the same disastrous results as a gallon. How about a 'Pasteurize for Purity' campaign?"

MRS. LEROY J. NELSON of Rolfe, Iowa, uses her canner for pasteurizing. Here is her method.

"The way we pasteurize milk for home use has been very satisfactory for us, and doesn't take much time or effort. I do a two-day supply at one time, and in that way just pasteurize every other day.

"I use my canner, placing seven jars of milk in the rack. The regular lids are on all the jars except one, which has a specially made lid with a hole in it just large enough for my dairy thermometer. I fill the canner with water up to the level of the milk. I place the canner on my electric range and leave it there until the temperature reaches 145°.

"I then turn off the heat and leave the jars in the hot water for 30 minutes, reheating if necessary to keep the milk at 145°. Then I put the canner in the sink and run cold water into the hot water, gradually cooling the milk. Then I put the jars into the refrigerator.

"This method doesn't take too much time, now that I have an electric range, and I know that I am safeguarding my family against all milk-borne diseases."

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HOME-UTILITY ½" Drill
$44.95

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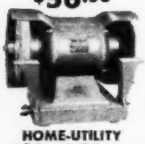

HOME-UTILITY 6" Bench Grinder
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With new machines and repair parts becoming harder to get, it's more important than ever to keep your present equipment in good shape. And now—when you have time before spring activities — is the best time to start overhauls. That's where Home-Utility Tools come in mighty handy! They can help you in repairs, in cleaning, in making adjustments, in installing labor-saving accessories and attachments.

The Home-Utility Tools shown on this page are just a sample. See your hardware or implement dealer for demonstrations of the full line. They're all quality-built by BLACK & DECKER, world's largest maker of portable electric tools!

Fix them in February—keep them rolling all season long—with Home-Utility!

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Broiling Means Good Eating

Broiling is like going on a trip —it gives you a whole new set of eating thrills. Never let a week go by without giving your family some treats from the broiler of your electric range. Broiling makes it possible to give your meats a rich brown appearance which you get on picnics when cooking over an open bed of hot coals. It gets you away from eating rich gravies and greasy foods. Then, too, broiling takes less watching than pan frying. It can simplify breakfast, dinner and supper as well

An all-in-one broiler dinner is easy for the men to prepare when Mrs. Chan Read is off to a meeting. All the men have to do is turn the broiler on before they wash up. The drippings from the ham during the broiling give the vegetables an extra fine flavor.

MONEY FOR LETTERS That Help Readers

WHAT UNUSUAL USES DO YOU MAKE OF YOUR VACUUM CLEANER? That is the subject for your February letters.

We've been hearing about vacuum cleaners with attachments being used out in the barn, poultry house, machine shop, garage and all over the house. Most of them have been retold tales. All of us would be interested in hearing first hand some of the extras you put your vacuum cleaner to work on.

For the letter we think most helpful in pointing out a labor saving use to our readers we will pay $10. Any other letters or parts of letters which we print will be paid for at regular space rates.

Send your letter to Nan Shaw, Housekeeping Editor, ELECTRICITY ON THE FARM, 329 Memorial Union, Ames, Iowa. It must reach her by February 28. Letters to be published will be announced in the May issue.

as party cooking on those days when you are helping with outdoor chores or doing extras for the family.

Plan meals which can be done on your range broiler rack or pan. Remember that steaks are just one of the many foods which do well under a broiler's dry heat.

Ever Try

FILLETS OF FISH in the broiler? Because fish is so flaky and breaks easily, use the flat broiler pan rather than the rack. Rub it with a generous amount of bacon drippings. If you like, put a half strip of bacon under each fillet. Drip some lemon juice over the surface of the fish, then salt and pepper it. Spoon some bacon drippings on top to seal in all the flavors. There's no spattering, or turning to be done with these fillets in their 25 to 30 minute broiling time. This is an easy and safe dish for anyone in the family to make. You also do away with the smell of fried fish which so penetrates the house, especially in the winter time.

A POUND OF BACON, little pig sausages or ham sliced thin and cut into individual servings under the broiler? Gives you a better chance to get the pancakes, eggs and coffee on the table at the same time with the meat.

TOAST FOR ALL under your broiler for a breakfast table or a gang drinking cocoa? Hurries things along.

OPEN-FACED SANDWICHES made of most any meat, or cheese, or both in combination? They can quickly satisfy supper and party eaters. Try mixing one part grated cheese with two parts ground beef. Form mixture into flat cakes to cover slices of bread or buns. Or just spoon it on and flatten it out to the edges of the bread.

FRANKFURTERS? They go for a range broiler as well as for an open camp fire. To simplify turning, crowd a pound or more into the broiler pan after the pan is generously greased with bacon drippings. Occasionally turn frankfurters by shaking the pan or scooping under and over with a broad cake turner. If you want to give the 4-H Club a refreshment surprise next time they're at your house, slit frankfurters lengthwise, insert a strip of processed cheese, wrap a slice of bacon around each frankfurter. You might like to fasten ends of bacon in place with tooth picks. If you're particular and want to turn the frankfurters, you'll find that tongs work best. However, turning is not necessary.

DESSERTS which speeds serving of something that's good but different? Butter slices of leftover angel, sponge, or butter cake, or doughnuts. Toast under the broiler, then serve it a la mode with ice cream from your freezer. Chocolate or caramel sauce and a few chopped nuts make it look like a Super Special.

LEFTOVER VEGETABLES and fruits heated in broiler pan under the meat on the rack? They capture the fine flavor of the hot meat juices while they are getting heated.

BROILING YOUNG CHICKEN? Halve or quarter the chicken, season and coat with bacon drippings or other fat. Allow as much cooking time as for frying. Start with cut side toward heat. The bones help carry the heat quickly to the center of the meat.

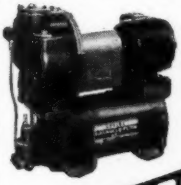
"Everything's Easier"

with GOULDS "CITY WATER SERVICE" ON THE FARM

"Everything's easier—from washing my car to keeping my milk checks up," says Phil Huston of Meriden, N.H. "and my Goulds Balanced-Flow Jet gives us the most *economical* water service I ever heard of!" Rural owners everywhere are enthusiastic about the Balanced-Flow unit. It's the amazing *tankless* water system, with exclusive self-adjusting capacity. It delivers any amount of water at one or more outlets at the same time (up to 540 gallons an hour)—with no spurt, no lag. It's trouble-free (there's only one moving part)and low-priced! See it at your dealer's.

GOULDS *Balanced-Flow Jet*

The Balanced-Flow Jet needs *no* tank —*less* pipe than other units . . . and these are scarce and expensive items on today's market!



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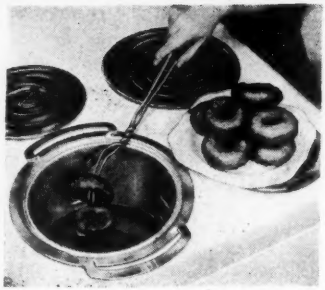
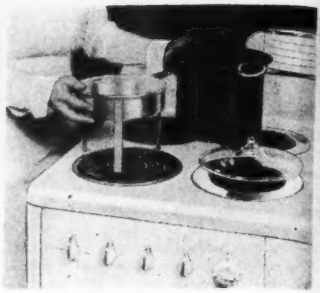
Just as you fit roasts and baking recipes to pans, so fit your broiling to pans to fit the amount you are doing. The broiler pan which comes with your range is to take care of your largest broiling needs. For a couple of chops, hamburgers or a slice of ham, place a small rack or trivet in a pie or shallow cake pan. Your broiling will be more satisfactory and you'll have less pan to wash! Your own range manual will be the best guide for proper spacing of pan with food below the broiling unit.

Remember that when you have an electric range broiler you have the finest and fastest in broiling heat. Learn to use it. It can be a time saver for you.





Left: Your well cooker safeguards against the spilling or upsetting of hot fat. Its deep sides also reduce the chance of grease bubbling up and over when fresh foods are added for frying. For the same reasons it's a good kettle in which to make jelly from last summer's canned fruit juices. **Right:** If your well cooker has a rack, use it to bake those few apples, potatoes or cup custards rather than the large oven. Inset pans make it possible to cook soft and solid foods at the same time.

FARM MOTHER STRICKEN WITH UNDULANT FEVER

Hospitalized three times within year

"I am lying in bed writing this letter—just arrived home after my third stay in the hospital in less than a year due to Undulant Fever. It is a terrible disease, causing pain and discomfort, weakness, nervousness and depression. My two small children don't know what it means to have a mother that is well and able to do for them. My advice to all farmers is—pasteurize your milk before you become a victim."

(Signed) Mrs. Robert I. Smith

BE SAFE—Pasteurize Milk at Home

Your doctor will tell you that raw milk may contain the disease organisms that cause not only undulant fever, but also septic sore throat, typhoid fever, scarlet fever and even dreaded polio. Milk MUST be pasteurized to make it safe. It's easy to do with the HOME HEALTH unit. Automatic . . . laboratory tested . . . guaranteed.

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Rochester, Minn.

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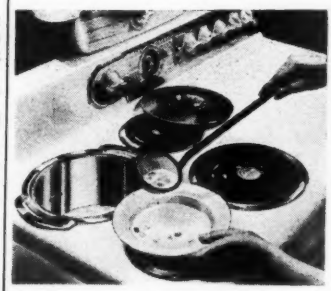
MILK & CREAM PASTEURIZER

Work Your Well Cooker

That well cooker on your electric range is the best time and labor saver you have in your kitchen.

It's really made for the farm homemaker who has a lot of cooking to do but has little time for kettle watching. Put your cooker into full time service these short winter days to help you satisfy the family's cold weather appetites.

Use it for breakfast, dinner and supper to steam, braise, roast, bake, stew, warm, or sterilize. You'll find good suggestions in your own range book of instructions.



Left: Long slow cooking is ideal for large quantities of soups, stews, and cocoa. **Right:** On those days you go to meetings, start dinner in the cooker. It's easy then for the folks to serve themselves at dinner time. All they have to do is turn off the heat.

Sugar Pie

If you have pastry left over from pie-making, turn it into surprises for your youngsters. Pile odd strips of pastry one on top of the other, then roll out. Cut with fancy cooky cutters. Moisten with milk and sprinkle with sugar and cinnamon. Bake on ungreased cooky sheet in a hot oven (450°) 8 to 10 minutes.

Custard Pies

If you want to be certain of a well-baked bottom crust and a firm, tender custard, bake your next custard pie at 400° for 25 to 30 minutes.

Washington's Birthday Cake

2¼ c sifted cake flour
2¼ t double-acting baking powder
½ t salt
¾ c butter
1½ c sugar
3 eggs, unbeaten
2/3 c milk
1 t vanilla

Sift flour once, measure, add baking powder and salt, and sift together three times. Cream butter in your electric mixer, add sugar gradually, and cream together until light and fluffy. Add eggs, one at a time, beating well after each. Add flour, alternately with milk, a small amount at a time, beating after each addition until smooth. Add vanilla and blend.

Turn into two 9-inch layer pans, 1½ inches deep, which have been lined on bottoms with paper, then greased. Bake in moderate oven (375°) 25 minutes, or until done.

Fold 12 chopped maraschino cherries into ½ cup sweetened whipped cream and spread between layers. Spread ½ cup sweetened whipped cream on top of cake. Decorate with candy hatchets or maraschino cherry halves.

Chili Con Carne

On a cold blustery day, what's more tantalizing than good Chili Con Carne simmering in the kitchen?

If you have a well cooker or an electric casserole there's no better place to slow-cook it. This steaming dish will satisfy your hungry family:

Chili Con Carne

1 pound ground beef
1½ to 2 c pinto beans (or red beans)
Salt and pepper
2 T shortening
2 large onions, cut fine
2 cans tomato paste
3 to 4 T chili powder

Wash and soak beans over night. Simmer in electric cooker, until tender—about 2 hours. Season with salt and pepper. Brown ground beef in large, heavy skillet, turning frequently to keep from sticking. Melt shortening in small skillet and brown onion and if you like, 1 or 2 cloves of garlic cut fine. Combine onion, garlic, tomato paste, and chili powder with browned meat in large skillet. Simmer for about 20 minutes. Add the chili mixture to the cooked, seasoned beans and simmer on low heat for about 1 hour. This is thicker than most chili dishes, so stir occasionally. Serves 6.

With cornbread toasted under your broiler, and a tossed green salad, this makes a tasty meal.

Pan Preparation

USDA Recommendations

One of the small but important details for successful baking is the proper preparation of the pan. Whether to grease, or to dust with flour after greasing, or to line the pan with paper is a question that confuses many cooks.

Flouring the pan after greasing is added insurance against sticking. It has the disadvantage of forming a slight extra crust which many cooks dislike. Waxed or greased paper, may be used to protect against scorching or sticking to the pan. But unless it is pulled off immediately after baking, it may stick to the baked food. Because paper scorches easily, it should be used only when baking is done in a slow oven.

Therefore, USDA cookery scientists say the method to be used depends on whatever is being baked. Plain greasing, or greasing and then dusting with flour, may be used for mixtures like cakes and cookies that contain both fat and sugar. Greased pans and no paper are recommended for quick breads—loaves and muffins — and for yeast breads whioh bake at a relatively high temperature. In contrast, heavy unglazed paper is specified for macaroons which contain a high percentage of egg white, no fat, and bake at a low heat. This same type of paper, if greased, may be used for rich

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mixtures like fruit cake which burn easily and need long, slow baking.

Sponge cakes and angel food are the exceptions. They are baked in plain pans—no greasing, no flouring, and no paper because, if properly made, sticking is no problem with these cakes.

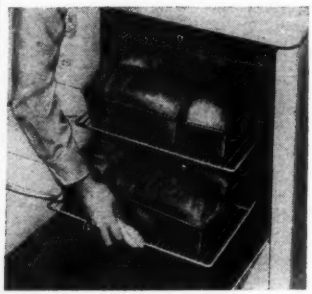
For cake baking, the bottom of the pan only should be prepared. The sides are left plain without greasing so that the batter can cling as it rises, and thus help keep the cake light in texture.

The best fats and oils for greasing pans are bland, without decided flavor, and contain no salt, water or protein, any of which may cause sticking. This is why bacon fat, margarine and butter are less satisfactory than other fats. Apply fat with a clean, soft bit of paper, and use just enough to cover the pan surface smoothly, evenly and lightly.

Home-Baked Potato Bread

For variety in home-baked bread, try potato bread.

The largest proportion of potato that you can use with an ordinary recipe, if the finished loaf is to have a breadlike taste



and texture, is one-sixth as much cooked potato as flour, by measure.

You may use potato in standard bread recipes if you keep in mind these points:

Boil the potato and put through a ricer. When measuring, pack the riced potato well in the cup.

Mix the riced potato thoroughly with the milk called for in the bread recipe, to prevent the potato from forming lumps in the loaf.

Most important of all, set aside a good amount of the flour called for in the recipe, for kneading the dough.

This recipe is the result of tests by USDA home economists. It uses one-sixth as much potato as flour:

Potato Bread

1 c milk
½ c riced boiled potato
1 t salt
½ T fat
1 T sugar
1 cake yeast
3 to 3½ c flour

Scald milk, add potato, salt, fat and sugar. Cool to lukewarm and add the crumbled yeast. Stir in 2½ cups of flour, and mix well until blended, reserving the rest of the flour for kneading. Sprinkle kneading board liberally with reserved flour. Turn out dough on board and knead until smooth. Let rise 1½ hours, or until double in bulk. Punch down and let rise 1 hour. Knead lightly, shape and let rise in pan 1 hour. Bake 15 minutes at 375°. Lower heat to 350° and continue baking for 45 minutes. Makes one loaf.

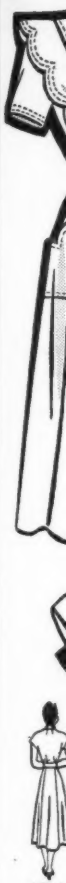
We Were in a Rut

By MRS. R. W. BERGER
Fox Glen, Portage, Wis.

Had we never moved to the country, we might never have known the joys of owning an electric range. You know the old axiom, "You can't miss what you've never had." Well, that was our status. We were living in a middle-sized town where we used fast, economical gas for cooking. And we'd never felt an urge to change our procedure. Our kitchen was equipped with a sparkling heat controlled range. And since we're a family that loves good food, well cooked, that range was brought into constant play. It was the bearer of many culinary burdens. But we little realized how contentment can cause stagnation. We actually were in a rut and didn't know it.

Of course, we had heard of electric ranges! Our friends were forever extolling the merits of their electric ranges. But we liked gas. It was quicker, we always had retaliated. And cheaper, we said. But that in not so sure a tone. For the truth is, we'd sort of staggered over some of our gas bills.

And then came that fateful day, when we found our home in the country. After the final transactions had been made, and we were once more looking over our new premises, the former owner casual-



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9012—A wrap-about with easy-sew details. Sizes 12-20; 40. Size 18 takes 4⅞ yards of 35-inch material.

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Send TWENTY-FIVE CENTS (in coins) for each pattern to: ELECTRICITY ON THE FARM, 196, Pattern Department, 243 West 17th Street, New York 11, New York.

TWENTY CENTS more for the new Spring Pattern Book with a free pattern printed in the book.

ly remarked, "This kitchen is wired with 220 volts for electric cooking. But nobody ever has used an electric range."

It was then that the idea struck us. An electric range! Over a cup of coffee we held a husband and wife conclave. We knew just like that that we wanted an electric range.

And we marched right out and got one.

Now we're finding that an electric range can give a great deal of daily contentment. We're having the most glorious fun we've ever had in a kitchen. Our range has all the deluxe features for carefree cooking: high speed units, automatic controls, oven timer, well and pressure cooker, super-radiant broiler, and on and on.

What we had missed in years of solid enjoyment with electric cooking we are now making up for. And it will be long before our enthusiasm dies. "A penny saved is a penny earned," wrote Poor Richard. And we wager he would have chuckled at such a vicarious way of earning pennies—by buying a new range. But we know we're doing just that with our economically operated electric range.

No Smell of Gas Now

By **MRS. LEONARD LANGSDORF**
R 1, Box 164, Red Wing, Minn.

I think I've always dreamed of owning an electric range, but my dream didn't come true until about a year ago, after we got electricity. Before that I had a bottled gas range, and that was quick and much better than the old wood range. But there was always the gas smell, and the tank had a way of going dry when I had a party. We could get only the tank at a time then, and that was very unhandy.

I have to have my range near a window, and the curtains always used to get yellow and dirty looking. Now they just get dusty. I'm sure my electric range is the cleanest range there is.

Gas and electricity both cost about $4 a month, but I would never go back to gas.

Fewer Scratches

Wash forks separately if you don't have a dishwasher. Otherwise, the sharp tines of the forks are likely to scratch the other pieces of silver in the dishpan.

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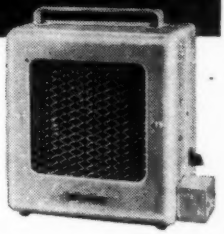

Two Models:
1500 Watts
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Install one of these units in your milkhouse and enjoy automatic, fan-circulated warmth for only a few cents a day! With its built-in thermostat, you install it and forget it—for years to come. The Model FA-15 heats areas up to 1500 cubic feet and the Model FA-30 heats areas up to 3000 cubic feet, depending upon your milkhouse construction. Electromode's lifetime heating element is so safe the heater can be used around hay or inflammables where open-wire heaters are not permitted. Factory-sealed motor never needs oiling. Easily installed. Finished in milk-white enamel. Cord and plug extra.

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Please send me complete information and cost data on Electromode Milkhouse Heaters and name of my nearest dealer. Size of my milkhouse is:_____. Construction is:_____. Is it insulated?_____.
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for Junior Partners

Hi

I just cracked open a nut. The meat tasted good. And that last little kernel you have to dig for is the sweetest of all.

Winter is a good time to sit by an open fireplace and crack nuts. I didn't have to do it. The nuts would still be there in the bowl if I hadn't. But I'm glad I did.

All around us there are nuts waiting to be cracked open. Opportunities to do things—to learn more—to taste new flavors. But many of them lie untouched. No one cares whether there is good meat inside or not.

You Future Farmers and 4H-ers—are you taking advantage of your opportunities? Are you starting new projects this year? Perhaps you're going to enter the contests. I hope so! Only 41 of the States had "Farm and Home Electric Program" winners last year. Can it be possible that there were seven states where nobody cared enough to try?

Don't pass up your county, state, and national contests. There are many benefits you can obtain just from trying. Like cracking nuts, you may get the whole kernel out in one piece. You'll win a prize. But if you don't, you'll still get just as much meat out of the nut as the winner does. And it will taste good. And you'll learn to crack nuts. Will you try?

Kenneth V. Anderson

What My 4-H Electrification Project Has Meant To Me

By **EDITH TYNES COLLINS**

Edith Tynes Collins, a 19 year old graduate of Rockfish Valley High School, was this year's Virginia State winner in the 4-H Farm and Home Electric program. She has been in 4-H Club work for nine years. She is president of Nelson County 4-H Club Council and figures her income from 4-H Club projects at $1936.25. Miss Collins is an all-star 4-H Club member. Here she tells the story behind her achievements.

"I became interested in the Farm and Home Electric program in May 1948 during a 4-H Club meeting. Our county agent, Mr. John Whitehead and our home agent, Mrs. Mary S. Stennett, asked how many club members would be interested in taking a course in electricity.

"They explained that like fertilizer, soil conservation, and crop rotation, the application of electricity to farm living is of prime importance.

"Being interested in electricity and eager to learn its uses, I completed a 16-hour course held during that summer at our school. It was given by the agricultural engineers and home economists of the Appalachian Electric Power Company cooperating with the Extension Service and the Virginia Farm Electrification Council. We were taught the fundamentals of electricity, common electrical terms and their definitions.

"After being instructed in the different types of wiring, and learning that heavier wire carried more current, we went to work with our hands. Each of us built an extension cord, repaired frayed and broken lamp cords and heater cords. We learned to replace faulty switches and blown fuses in our house wiring.

"We completed the course by going to the modern kitchen at the Appalachian Electric Power

Left: Edith is shown teaching principles of good lighting to Home Demonstration Club members. **Right:** The Appalachian Power Company taught Edith how to use modern electrical appliances. Here she is practicing on an ironer.

Company. There we learned to use all the modern kitchen appliances—the range, freezer, roaster oven, ironer, automatic clothes washer, clothes drier, and dish washer.

"I learned so many helpful and interesting things in the first course that I enrolled and completed the second year course given in 1949. Last spring when electric classes were held at school, I decided to take the course again, since I had learned so many useful things in the past two courses. This year we repeated what we had learned before and stressed the best methods of lighting the home and how to plan the wiring for our homes. We learned

Edith has given many demonstrations on simple wiring. Its easy to learn by doing.

to read meters and compute electric bills.

"Since completing these courses, I have given demonstrations to groups in my community and home demonstration clubs on simple wiring and home lighting. And I have come to realize more and more the real value of electricity and its many uses in the home and on the farm. I learned that there is an easier method for doing any job. It is the electric way. It will save time, it will save effort, and it will save money."

Electric Controls and Their Application

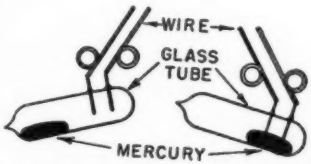
How Common Switches Operate

By PROF. D. C. SPRAGUE
Pennsylvania State College

Switches are used to start or stop the flow of electric current. When a switch is off a gap is created in the electric circuit over which the current cannot jump. When the switch is on, the gap is closed forming a continuous path for the current. The amount of current and voltage determines the type of switch that may be used.

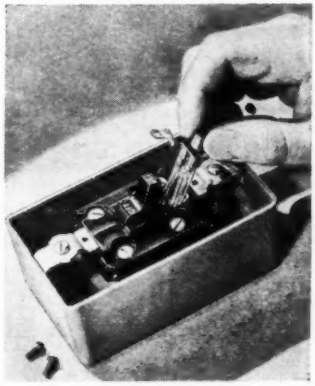
A switch for a flashlight may be a very simple device. The terminals on the battery and the bulb are used as the contact points. The electrical circuit is completed by pressing the button, but as the current and voltage are low, very little gap is required. The switch action can be very slow.

A slow acting switch like that used in a flashlight would not be satisfactory for household current. If you have seen an arc welder in operation, you will readily understand why. The electric arc created between the metal being welded and the welding rod generates heat so rapidly that it causes the metal to melt. The arc is caused by the current jumping across the air gap between the electrode and the metal. If the electrode is held far enough from the metal to be welded, the arc will disappear. That is because the air acts as an insulator. The gap that the current can jump depends on the intensity of the voltage and the current.



Schematic diagram of a mercury type switch. When tipped as shown at left the mercury is in the "off" position. In the "on" position, at right, the mercury connects the two electrodes. Such a switch may be actuated by a float or other means. They are used frequently in temperature and pressure control devices. The hand operated type is used to control lights where the noise made by ordinary snap switches is objectionable.

The current supplied to lights,



This switch provides a trouble free means of starting and stopping a motor. It also protects the motor against overloads. The part which is being inserted is the heater. An overload causes this part to heat excessively which trips the switch open. Each size of motor requires a different size heater.

heating elements and motors, also will cause an electric arc. Arcing always tends to occur between the contact points of a switch when they are opened. Breaking the connection slowly as in unscrewing a light bulb is a sure way to cause an electric arc. If current is allowed to arc between the points of a switch it will soon "burn" and damage them. For this reason, it is very important to select the right type and size of switch for each job.

Opening a switch very quickly reduces arcing to a minimum. For this reason, nearly all switches are made to open and close quickly. In most "snap" switches, a spring under tension actually opens or closes the gap.

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USE FUSED ELECTRIC
THERMOTAPE
READY TO USE!
JUST PLUG IT IN!
It's 100% SAFE. Comes ready to use. Simply wrap THERMOTAPE around the pipe or article to be protected from freezing and plug it in. That's all there is to a THERMOTAPE installation.
You can depend upon THERMOTAPE. Used with a SMITH-GATES Thermostat, THERMOTAPE goes to work when the temperature drops to near freezing.
100% SAFE

POULTRY WATER WARMER

Just plug the lead cord into outlet and immerse the heating unit in water . . . that's how simple it is to use. The built-in thermostat automatically turns on-and-off the current. It works only when the weather is cold.

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Most hand operated switches have this type of mechanism.

Some switches use a small amount of mercury sealed in a glass tube. This liquid metal flows readily and is a good conductor of electricity. As the tube is tipped one way or the other the mercury flows from one end to the other completing or opening the circuit as the case may be. They are used extensively for small equipment that starts and stops automatically. As the point at which the actual circuit interruption occurs is completely sealed within a glass tube, any arc which might occur could not ignite inflammable gases or dust. The tube also protects the contact points from corrosion and dirt. This is very important in some applications. The use of mercury switches on wall light switches eliminates any noise when they are turned on or off.

Overloading a switch will cause excessive heating at the contact points and will shorten its life. A small switch designed for controlling a light should not be used as a motor switch. Special heavy duty snap switches are available for controlling motors up to about 1 hp in size. They are avaliable with built-in automatic overload protection. Use single pole switches for motors which are used on 115 volts. Where motors are operated on 230 volt current, use double pole switches.

Lights may be readily controlled from any number of places by the proper selection, location and wiring of switches. The use of extra switches saves time, steps and decreases accident hazards. Motors and other appliances may be controlled from more than one point if desired. In the case of equipment which requires relatively large amounts of current or long runs of wire, remote control devices are used to decrease wiring costs. In these installations the main control switch is located near the equipment. This switch is operated by an electro-magnet which, in turn, is controlled by the remote control switches. This type of system permits the use of small wire and less expensive switches. It will be described in a succeeding article.

USDA Research

Value of Barn Cured Hay Proven

According to Dr. O. E. Reed, Chief of the Bureau of Dairy Industry of the U. S. Department of Agriculture at Beltsville, Md., modern forage harvesting methods including barn curing enable the farmer to increase milk production.

In Dr. Reed's summary he pointed out that preserving the hay crop as wilted grass silage or barn dried hay saved more of the dry matter, protein, and carotin of the standing crop, than was saved by curing the crop in the field, even under favorable hay making conditions.

Tests that have been run show a 40 per cent increase in milk production can be obtained by feeding hay cured in the barn with heat. Hay cured in the barn without heat showed an increase of 33 per cent. Wilted grass silage showed an increase of 38 per cent. These increases were over that of rain damaged field cured hay.

As expected, when compared with good field cured hay the increase in milk producing ability was lower. However it still is an appreciable amount. For the hay cured in the barn with heat it amounted to 11 per cent. Hay cured in the barn without heat produced 6 per cent more milk. And wilted grass silage produced 9 per cent more milk than good field cured hay.

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Save labor, time, and money — do barn cleaning in minutes instead of hours.

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414 E. Winnebago St., Appleton, Wisconsin
Farm Equipment Since 1888

—I'm proud I am a farmer!—

Questions and Answers

Battery Leads Interchangeable?

▶**Question:** *I have a charger for use on my automobile battery. I do not use my car often and I do use the charger at intervals to keep the battery up. Does it matter which of the two leads I attach to the negative or positive side of the battery?* J. G. T., Texas

▶**Answer:** The leads on the charger are not interchangeable. The proper lead must be connected to the positive terminal of the battery.

Soil Cable for Brooding

▶**Question:** *In one of your issues there was an article on radiant floor brooding. It stated that soil heating cable was being used. I am interested in this type of brooding. How is it done?* K. H., Pa.

▶**Answer:** In permanent installations lead covered soil heating cable is buried directly in the top ½" of cement of the brooder house floor. In portable brooder houses the following method has been used successfully. The floor is covered with the usual litter, 2" or more deep. Where the brooder is normally located, a sheet of 4' x 8' galvanized iron of 24 or 26 gauge is laid on top of the litter. A 60 ft length of heating cable is laid out on this sheet, spacing the strand about 6" apart between return bends. About ¼" of sand is placed between the cable loops to level it off and a second sheet of iron is placed on top. Approximately ½" of sand is placed on top of the second sheet. A thermostat bulb is placed under the bottom metal sheet. It is regulated so that the surface temperature of the brooder will be maintained at a temperature of 82 to 85 degrees. This temperature is gradually reduced as the chicks grow. The heat can usually be shut off completely after six to seven weeks. Supplemental heat is provided for the chicks by suspending two 250 watt heat lamps 3 ft above the floor area and 4 ft apart. After the first week, one of the two may be raised so that it covers the whole area of the brooder and the other one eliminated. Lamps will not be needed after ten days to two weeks. Sand is kept in place by 2 x 4's laid flat which form a fence for the brooding area. As the chicks grow, these should be stood on edge to prevent the sand from being scratched out.

This type of brooding is not yet foolproof. It would be best to try a small brood the first time you use it.

Homemade Freezer Plans

▶**Question:** *I would like some information regarding the building of a home freezer in the basement. My plan was to build a walk-in type of freezer, altho not necessarily a large one. Can you direct me to any bulletins or publications that would give information of value, regarding the following:*

What size unit would be needed for a 6'x6'x6' box?

How thick should the sides be?

What type of insulation would be the best?

Do you know of any concern that would be apt to have blueprints of such a box?

F. S. G., Ind.

▶**Answer:** At the low temperatures used for freezers, the walk-in type, unless very large locker plant or processing plant, is not only extravagant to operate, but it is also wasteful of refrigerated space. Passageways must be left so that all articles in storage may be reached. This obviously eliminates the utilization of a large part of the chest. The same amount of usable area can be achieved with a smaller unit through use of reach-in doors or lids. As products are frozen in packages sized for normal table consumption, there is no need to make allowances for large bulk handling. Also, in a unit the size you propose, the two openings and closings of the large door involved in removing products from the freezer would result in an excessive rate of air change.

The generally accepted figure in computing home freezer size is 6

. . . . . (More on page 33)

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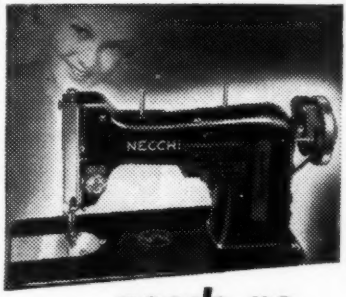

. . . needs no attachments!

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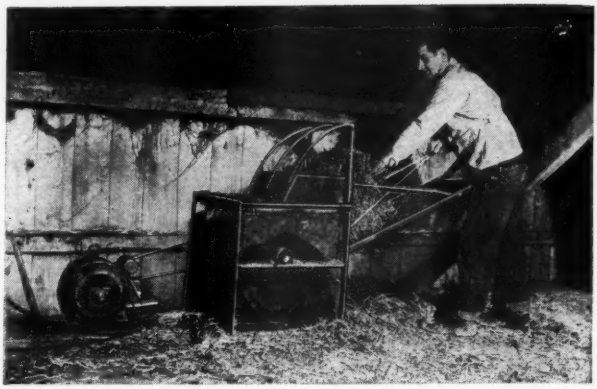


Mr. Barnum puts a tightly packed bale of alfalfa hay through the bale "buster" he devised and built for his own use. He holds onto the string ties. They are salvaged and are not allowed to become mixed with the forage.

Mechanical Bale Shaker

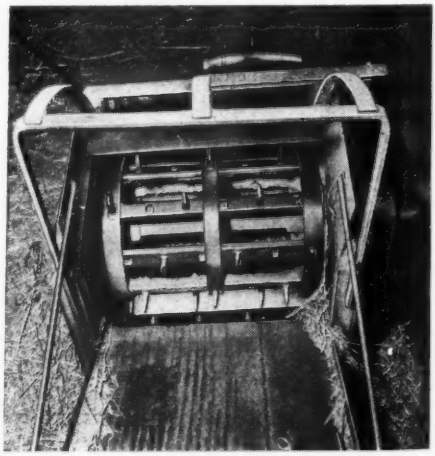
By **R. E. JOHNSON**†

Virgil Barnum RFD 1, Stryker, Ohio, was tired of the monotonous job of shaking out bales of straw and hay with a pitchfork. He recalled how the concave cylinder of a threshing machine, armed with whirling spikes, tears grain bundles to bits. Could such a cylinder, properly housed, tear up bales of hay or straw?

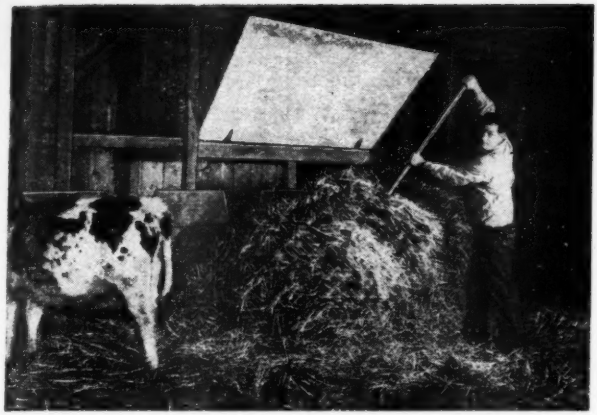
With his idea for a bale "buster" fresh in mind, he rounded up a 22 inch thresher cylinder. Then he got some metal sheets that formerly served as ends on a cable drum, some angle irons and a few other odds and ends for parts.

In a short time he welded up a box. In it he mounted the cylinder. A few of its teeth were removed so that it would not shred too fine. This also reduced the power required to operate it. Excluding the 3 hp motor, only $18.00 worth of new parts were required to build and completely equip the device. The motor is also used, when needed, on the grain elevator. Between the two pieces of equipment, it is kept busy most of the time.

†Mr. Johnson is Manager, Farm Power Department, Toledo Edison Company, Toledo, Ohio.



The business end of Barnum's bale "buster." Alternate teeth have been removed from the reel so that hay or straw will not be shredded too finely. This also reduces power requirements. A 3 hp electric motor furnishes the power.



When tilled as shown in this view, the plywood section will divert the fluffed hay directly into the manger. It is then distributed with a pitchfork. When chopping straw, for bedding, the plywood is swung back against the wall. The bedding drops directly onto the floor. Here is Mr. Barnum distributing the straw. Both hay and straw handle easily after the bales have been put through the bale "buster" located on the mow floor above.

The "buster" is set up in the mow.

A manger runs along one wall of the shed and a piece of plywood, hinged at the bottom, serves as a hay chute. It takes just seconds to put the hay through the machine. The fluffed forage slides down and is easily rolled along to both ends of the manger. Barnum estimates that the "buster" saves a bale of hay a day because the cows do not get a chance to trample it underfoot.

The machine is used for bedding straw as well as hay. When straw is being handled, the hay chute is pushed back out of the way.

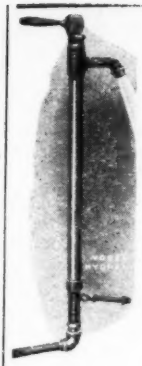
The straw drops straight down onto the shed floor. Only six minutes are required to bed down the cattle in this shed which measures 36′ x 40′. And because the straw is shaken out, as it is when it comes from a thresher stacker, it is easier to clean out. There is less wear and tear on the spreader as there are no heavy slugs of straw in the manure.

Batter or Umpire?

Prof. Clifton L. Ganus of Harding College, Searcy, Ark., says: Freedom without responsibility is license. We don't want that. What we must have is Freedom With Responsibility. The government should be the umpire—not try to knock the home runs.

A one-quarter horsepower electric motor will do the work of two men in any job where it can be applied. If you're not using electricity on every farm job that you can, you're probably paying yourself about one cent an hour for the labor you do on those jobs. Those are pretty low wages. But electricity can do the job that cheaply.

FRANK ANDREW,
Ext. Ag. Engr.,
Illinois College of Agr.



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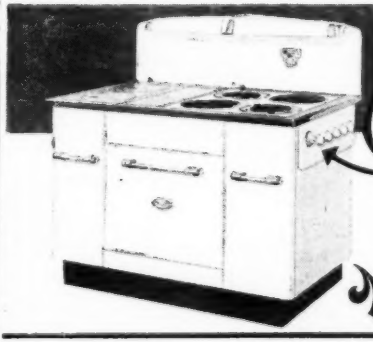

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MONARCH RANGE CO.
7011 Lake Street
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Questions and Answers

(Here from page 31)

cu ft per person served. From this, I would judge that you would want a smaller freezer than that listed in your letter.

If, on the other hand, you are desirous of building a 6'x6'x6' walk-in cooler at conventional storage temperature and include a low temperature section, I would expect this size to be satisfactory. This would give you a refrigerated area in which meat could be chilled and cured prior to freezing and a frozen compartment of a size adequate to your needs. For this service, a ¾ hp compressor unit should give you ample refrigeration. The thickness of the sides will vary with the type of insulation used. Corkboard is probably the best material. However, glass or mineral wool is most commonly used. It is entirely satisfactory and readily available. Using this material, I would suggest a wall thickness of 6" for the conventional storage walls, 4" for the wall between the conventional storage and the freezing section, and 10" for the walls between the freezing section and the exterior.

A chest type freezer plan may be obtained from Texas A & M College, College Station, Texas. A different plan may be obtained from the Agricultural Extension Service, University of Washington, Pullman, Washington.

For plans for the reach-in and walk-in two temperature farm refrigerator, you should write to the University of Washington as listed above, or the Agricultural Extension Service, Knoxville, Tenn.

The International Harvester Company, Chicago, Ill. and the Wilson Cabinet Company, Smyrna, Dela., manufacture sectional walk-in units which may be purchased and erected by the home owner.

Your cows are healthier and produce more milk when the air in your barn is fresh, dry and at approximately 50° temperature. FAN-PAC provides CONTROLLED ventilation to eliminate excess moisture indoors. Helps protect your buildings and equipment from rot and rust, eliminates bad odors, makes working conditions healthier for you.

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Electricity Used for Pumping Water

▶**Question:** *I have water piped into the house and an electric pump at the well. How many KWH does it use in pumping water for 15 minutes a day?*
M. B., Ill.

▶**Answer:** It is estimated that 5-KWH are used to supply an entire farm with water for one month.

In general, an electric motor uses about 1 kw-hr of electricity per hour of operation per horsepower. If you have a 1 hp motor running for 15 minutes, it will use approximately a quarter of a kilowatt-hour. A ½ hp motor running for 15 minutes, would use approximately ⅛ of a kilowatt-hour.

Type of Ventilation Control

▶**Question:** *I have a motor and blower to use for ventilating my cow barn. There are no controls with it. What kind of control should I use? Is it necessary to use a humidistat?* C. D. F., Wis.

▶**Answer:** Barn ventilating fans can be operated by humidistats or thermostats. The thermostat is most generally used. Experience has shown that if a barn temperature of approximately forty-eight degrees is maintained the condition of the air in the stable will be good.

It is not necessary to use a humidistat. They are fairly delicate instruments and are operated by the humidity of the atmosphere. It is possible to have a very high relative humidity even though the temperature may be very low. Under such conditions it would not be advisable to remove much air and, at the same time, heat from the barn.

How We Use Our Freezer

By **CHARLES L. SAKON**
R.F.D. #1, Sharon Springs, N. Y.

About this season of the year the full value of a freezer on the farm is realized. There is nothing any better than good frozen strawberries, raspberries, and sweet corn taken from your own garden. We would not have had this abundance of good food for our family this winter if it had not been for our freezer. Last summer we stored in our freezer the following:

80 quarts of domestic strawberries
42 " of wild strawberries
70 " of black cap raspberries
40 " of blackberries
30 " of currants
50 " of asparagus
80 " of stringless beans
500 pounds of beef
About 200 pounds of pork products
In addition we have several fryers and roasters

Our freezer has become our No. 1 storage for food on our farm. We just wouldn't do without it. We have done all this with a 20 cu ft freezer. It originally cost me about $400. As far as we are concerned, it has paid for itself this year. We got another pleasant surprise too in its operation. I figure that it has only cost us about $2 per month to operate it. My out-of-pocket expense for all this food for a five month period amounted to $178. A conservative figure on its value would be $600. Therefore, I conclude that my saving of $400 on this food would pay for the freezer.

As far as I am concerned, we have just begun to realize just what we can do with our farm freezer. During 1951 we are going to look for bargains in meat and conserve what we can from our farm. I believe we can better this $400 saving in 1951.

SUNBEAM HAS the *Thumb-tip Heat Control Dial* up in the handle, where it is always cool and convenient. Easy-to-see. Easy-to-set. A finger-touch sets it for the correct, safe heat you want.

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RAYON
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SAFE steady *Low* heat that will not scorch the finest lingerie.

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Until you've used Sunbeam Ironmaster, you've no idea how much faster and easier ironing can be. No waiting for it to heat up—it's ready to go in a split minute, and always delivers the *correct*, steady heat for whatever fabric you're ironing. That's why you finish quicker, feeling fresher with a Sunbeam on the job. See your dealer.

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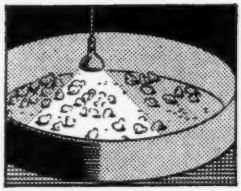
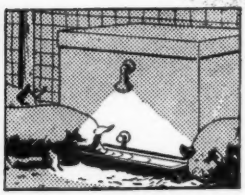
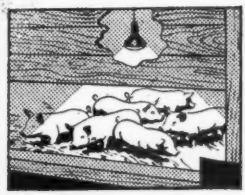


In a Chick Brooder or Hover



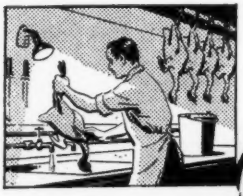
To Keep Watering Troughs Free of Ice



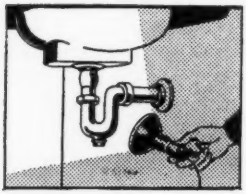
For Pig or Lamb Brooder.

To Make Your Milk-House Comfortable.

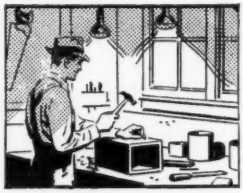
HOW MANY WAYS



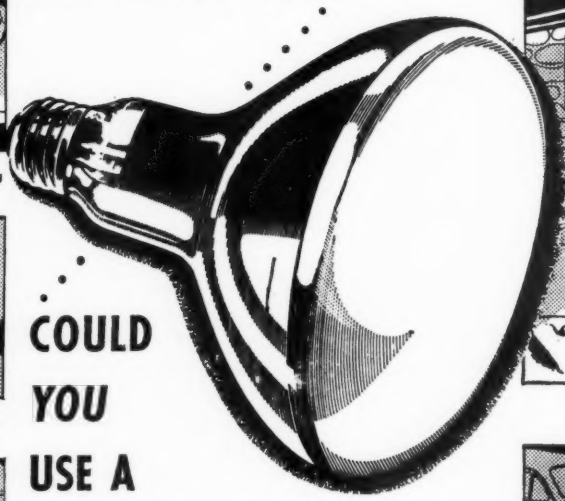
Comfort While You're Dressing Poultry.



For Softening Grease in Sink Drains.

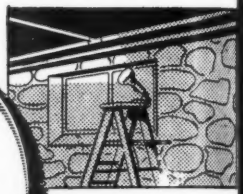


Heat For the Workbench.



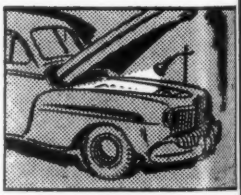
COULD *YOU* USE A HEAT LAMP?

An Infrared Heat Lamp can be used in literally dozens of ways on the farm and in the home. Flexible, long-lasting, versatile, it fits any ordinary socket; and is economical to use for limited periods.



For Thawing Frozen Pipes.

To Relieve Sore or Aching Muscles.



To Start Cold Engines.

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